

# small air forces observer

vol. 22 no. 1 (85)  
April 1998

US \$4.00



**RF-84F Serials (Part 3) Taiwan & Greece**

**Small Air Force Heinkels**

**Swedish S-Planes**

**Hungarian He 170**

**Bulgarian He 51**

**He 112 & He 114**

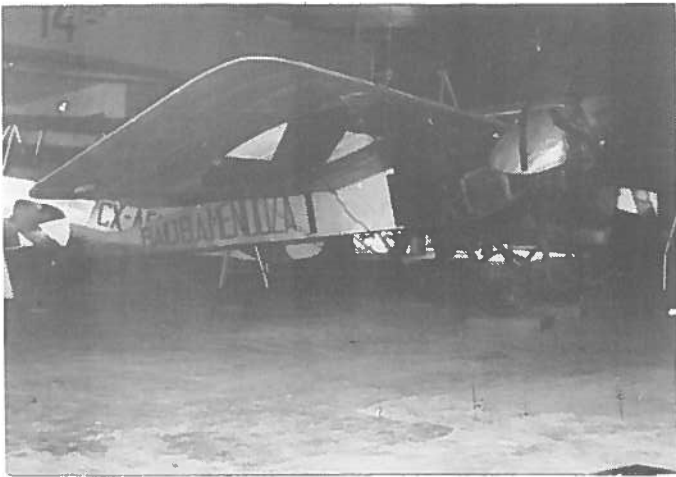
**Czechoslovak Colors**

**Chinese WWI Ace**

**Chinese FBA**

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# SMALL AIR FORCES OBSERVER

The Newsletter of the Small Air Forces Clearing House

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**SAFO EDITORIAL POLICY:** The purpose of the SAFCH is to "promote interest in the history and modeling of the aircraft of the smaller countries". In support of this goal, the SAFCH encourages international cooperation in researching aviation history, both military and civil, from all periods of time, and for all the smaller countries. In return for this support, members are asked to submit occasional progress reports for publication in the SAFO. While the final results should appear in the most prestigious publication possible, it is requested that the SAFCH be mentioned (with address) in the article and that SAFO be afforded the opportunity of reprinting the material. Article published in SAFO can be reprinted provided permission of the author is obtained and the SAFO is identified in the reprint.

**SUBSCRIPTION RATE:** Subscription to the current volume of the SAFO is US \$12.00 for 4 issues in the USA and elsewhere via surface mail. For the cost of air mail delivery, contact the editorial office, or send \$22.00 and any surplus will be credited to your account. Payment should be made in cash, by International Money Order, or by a check drawn on a bank with a subsidiary in the US made payable to "Jim Sanders". New subscriptions begin with the next issue published after payment is received; if you desire otherwise, please specify which issues are desired. Send remittance to Jim Sanders, 27965 Berwick Dr., Carmel, CA 93923 USA.

**BACK ISSUES:** Either back issues or Xerox copies of out-of-print issues are available for all issues of the SAFO published. For a list of all issues and their content, send two 1st class stamps (or 2 IRCs) to the editorial office.

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**LOST MEMBERS:** Anyone knowing the whereabouts of the following 'lost' SAFCH members please inform the editorial office (last known address included): Eric Stoutenburg, Ft. Carson, CO; Curtis Marzolf, Bulverde, TX; E. Tronn, Montreal, PQ Canada; Alain La Pierre, Maracay, Venezuela; Michael Parr, Prince George, B.C. Canada; Richard Harrison, Stroudsburg, PA; Ellis Estes, Alexandria, VA. Gary Lepinski, Minneapolis, MN; Andrzej Lesicki, Poznan, Poland; Ludoric Lamouroux, Monty, France; Renald Gravel, Quebec, Canada; Scott Fraser, Sidley, BC, Canada. Miguel Angel Sanchez Ruiz, Mexico.

**IN MEMORIAM:** It is with great sadness that I report the untimely death of Nickolas J. Waters III. Nick was the second member of the SAFCH (SAFCH #2) and was instrumental in getting SAFO off the ground with a series of outstanding articles in the early issues. Among his contributions were: "Latin American F-51" (SAFO #8); "Latin American F-80" (SAFO #11), "Latin American T-33" (SAFO #14), "Latin American B-26 Invaders" (SAFO #21), his magnificent "MiG Mania" series (SAFO # 36, 37, 38, 40, 41, 42, 43, 44, & 45), and "Aero L-39 Albatros" (SAFO #48). Nick will be missed, but we can take comfort in the fact that he has probably introduced St. Peter to scale modeling and right now is showing him the correct markings to put on his model of a Moldavian MiG-29. Happy modeling, Nick.

**COVER COMMENTS:** The response to my request in the last issue for photos from the members has been great and the photos in this issue are all

of this type. The photo on the front cover was taken by SAFCH member Kai Willadsen (Denmark) at an Estonia air show, and was sent to SAFO by SAFCH member Nils Treichel (Germany). This Latvian Mi-2 is camouflaged dark green, medium green, and tan. The red/white/red roundel has an unusually narrow white ring. The serial '151' is red outlined in white. The rotor hub is natural metal and the blades are medium green with tan tips.

**TAILPIECE:** The two photos of Argentine aircraft come from Jorge Nunez whose latest book, on the Argentine Mirages, is reviewed on page 28. The top photos shows Mirage IIIIEA 'I-006' of Grupo 6 de Caza at Base Aerea Militar Tandil on 7 November 1997. The a/c is in a 25th anniversary color scheme consisting of dark blue, medium, blue, and light blue with a white strip extending across the wings and up the vertical fin. The '25' is red and the lettering on the white stripe is black. (Photo Jorge F. Nunez Padin.) The lower photo shows a A-4AR Fighterhawk 'C-908' of Grupo 5 de Caza shortly after it arrival at Base Aerea Militar El Palomar on 22 December 1997. The camouflage is a light grey, medium grey with dark grey markings including the intake lips, serial, Argentine flag, and feather(?) on the vertical fin. (Photo via Jorge F. Nunez Padin.)

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"Wanted: Information and photocopies of photographs of early postwar Vietnamese, Korean or Laotian aircraft (including airliners), circa 1949 through 1955, markings, color schemes and insignia. Will pay cost of copying and postage." Charles Euripides (SAFCH #1286), 5408 Willow Croft Court, Charlotte, NC 28226, USA.  
"Wanted: Information on the book, 'Radaranlaeg i Danmark fra 1942 til 1945' (Radar Stations in Den-

mark 1942-1945), by M. Svejgaard. Published by Miljoministeriet, Skov-og Naturstyrelsen 1992." Jan Poul Petersen (SAFCH #978), Emdrupvej 66 2. th., DK-2400 Kobenhavn NV, Denmark.

"For Sale: Collection of Kuwait Air Force posters of all types of aircraft used. Other items for sale. A few slides and photos to order. Poster set has 13 types of KAF aircraft + large fleet poster. KAF

small history books, in English (or 'rare' Arabic version) with photos of aircraft. Lists." A.J. Moitie, 9A Edward Way, Ashford, Middx TW15 3AY, England. Tel 01784 210847 (UK).

"Information wanted on the BF 109E sent to Japan." Tom Perry (SAFCH #156), Box 1711, Hillsville, VA 24343, USA.

## AUSTRALIA

**AUSTRALIAN PLASTIC MODELLERS ASSOCIATION** (APMA, PO Box 51, Strathfield, NSW 2135; 4 issues sea mail A\$27; air mail A\$30). 4/97 (40 pages) "Tiger Moth" 2 pages including one photo and 2 side-view drawings of Australian civil cabin Tiger Moths. "Focke Wulf TA 183" 6 pages including drawings of corrections to kit and 13 side-view drawings. [Editor's note: 'Might-have-been' is fun to play and the a/c are fantastic, but why is the premise always that the Nazis were able to continue the war. How about a scenario where Hitler is assassinated and a democratic Germany joins forces with the Allies? I wonder what insignia they would have used in 1946.] "Chopper Chop!" 3 pages on modeling a civil Australian S.58 including a 3-view drawing. "Junkers F.13 Trench Strafer" 2 pages on JL 12 in USAAC markings including 2-view drawing. "Nocturnal Axis Twins: Part 2" 3 pages including 4 side-view drawings of Japanese night fighters. "Late War Aircraft Projects: Part 2" 2 pages with 8 side-views of Luftwaffe a/c. "Soviet and Iberian 109" 2 side-view drawings. "Qantas 1" 3 pages including 4 side-view drawings of the Avro 504 which was the first aircraft used by Qantas. "Martin B-26 Marauder" 11-page including survey of existing kits with tables and drawings of the differences among kits, tables and drawings of the differences among variants, cutaway drawing, history and markings of B-26s in Australia, and 15 side-view drawings.

## AUSTRIA

**OFH NACHRICHTEN** (Oesterrichische Flugzug Historiker, Felberstrasse 104/7, A-1150 Wien. Write for free sample.) 20-Year (77/97) Index available.

4/97 (36 pages) "Arado 68 fur Osterreich" 7 pages including one photos and 4 side-view drawings. "Luftfahrzeugregister" one page with table for 12/96 to 3.97. "Feldpilot Feldwebel Rudolf Stohr" one page. Photos: Austria AF Cessna L-19 & SAAB Draken, Swedish AF Lanssen; and Romanian SET 9 'YR-YRY'.

1/98 (36 pages) "Ehrlich V" 3 pages including 3 photos and a side-view drawing of 'A-18'. "Fiat CR 30" 4 pages including 2 photos and a 3-view drawing of Austrian AF '184'. "Junkers Ju 52 Farbschema" 3 pages including 4 photos of Austrian AF Ju 52. Three photos of Austrian AF Cessna L-19.

## BELGIUM

**KIT** (IPMS Belgium, c/o Michel Willot, dreve de Champagne 14, B-1190 Bruxelles; 4 issues US \$25 in cash, International Postal Money Order for 900 BF.

#107 3/1997 (36 pages) "Belgian Navy Alouette III" 5 pages on building a diorama including one color photo and one b&w photo of the prototype and 12 photos of the model. Fw 190A-5 a A-9 kits Hasegawa au 1/72 (Part 1) La Chasse de Jour" 9 pages including 9 photos of prototype (one in color) and numerous sketches. "Douglas A-20B/C" 4 pages including 6 side-view drawings (USAAF, RAF, RAAF, & Free French). "Drole de Spit" 2 pages including one photo and 2-view drawing of Spitfire Mk XVI.

## BRAZIL

**EM ESCALA** (IPMS Brazil, Rua Lucidio Lago, 457/206 - Meier - Rio, RJ, CEP 20780-020. Subscription is \$10.00, but they prefer kits or accessories. Send to Antonio Pereira Linhares at the

above address.)

#87 Janeiro/Fevereiro/Marco 1998 (16 pages) "Perfil e Detalhes: B-24 Liberator" one page with 5 sketches of details. "O Curtiss Hawk na Alemanha" 2 pages including 2 side-view and a perspective-view of Curtiss Hawk 'D-IRIK'. Two-page cutaway drawing of Ju-86. "Os Fiat C.R. 32 do Paraguay" 2 pages including 2-view drawing.

**REVISTA FORCA AEREA** (Action Editora Ltda, Av. das Aericas 3333 Sala 817, Barra da Tijuca, Rio de Janeiro - RJ, Brazil. CEP 22631-003. R \$ 4.80 each.)

Ano 2 N°8 - Set/Oct 1997 (108 pages) "Operacao Linked Seas 97" 8 pages including 11 photos (Portuguese and Brazilian Super Lynx). "Moscow Magic: MiG-29" 14 pages including 6 photos, a 2-page cutaway drawing, and center-fold painting of an East German Mig-29. "Pelicanos Guerreiros" 8 pages including 4 photos and 2 color side-view drawings of SC-95B Bandeirante SAR and Bell UH-1H. "Svenska Flygvapnet" 10 pages including 9 photos (Cougar, BAC Bulldog, Sk 60A, Gulfstream IV, C-130E, Saab 340, AJS 37, Saab 340 AEW, & Viggen). "Um Leao nas Alturas" 8 pages including 4 photos and a cutaway drawings of Super Puma/Cougar.

Ano 3 N°9 - Dez/Jan 1997/8 (108 pages) "A Saga do Netuno o P-15 na FAB" 7 pages including 5 photos and 4 color side-view drawings of BAF Neptunes. "McDonnell Douglas F/A-18 Hornet" 14 pages including 13 photos (RAAF, CAF, FAF, & Malaysia), a 2-page cutaway drawings, and a center-fold painting of USN Aggressor). "Os Rototes da Esperanca" 8 pages including 6 photos (BAF Super Puma). "Jaguars de Prata" 8 pages including 4 photos and 4 side-view drawings of FAB Mirages. "Asas Guarani: A Forca Aerea Paraguaia" 8 pages including 7 photos (T-35D Pillan, PZL Wilga, Boeing 707, Bell UH-1H, AT-26 Xavante, AT-27 Tucano, & Douglas C-47).

## CZECH REPUBLIC

**AERO PLASTIC KITS REVUE** (Vydavatelství Model Hobby Press, ul. 1. maje 11, 709 00 Ostrava-Mar. Hory, Czech Republic. 6 issues \$33 surface or \$45 air.)

#51 (76 pages) "Vojenske letectvo Egypta v letech 1961-1967" (Part 3) 7 pages including 11 photos and 14 color side-view drawings (Yak-18, HA-200, Zlin Z-227, Mi-4, Mi-1, Il-14, An-2, An-12, MiG-17PF, MiG-19S, Mig-21F-13, MiG-21PF, Il-28, & Tu-16R). "Prvni nadzvukovy" (4 cast) 5 pages including 5 photos, 2 pages of drawings of MiG-19SV & MiG-19UTI, and 5 color side-view drawings (USSR, East Germany, Bulgaria, Poland, Romania, & Hungary). "Neman R-10" 3 pages including one photo, a 3-view drawing, 4 side-view drawings of variants, and 3-color multi-view drawings. "V mori je i zralok" 3 pages on Czech shark-scheme Frogfoot including 4 b&w photos and 7 color photos. "Focke Wulf Fw-58 Weihe" 10 pages including 16 photos, a 2-page 1/72-scale drawing, 6 side-view drawings of variants, sketches of details, and 8 color multi-view drawings (all of Fw-58s in German service). "Soucasne Turecko ocima letectevho nadsence" 4 pages including 8 b&w photos of a/c in Turkish museum (AT-6G, F-5A, F-84F, T-33, TF-102, AT-11, & P-47D) and 8 color photos (AT-11, S-55, Do-28D, Do-28B, RF-84F, F-84G, TF-104G, Sabre Mk2). "12. letacka armada USA" 5 pages including 8 photos and 4 color side-views (B-17 & C-47). "Jak z polystyrenove tabulky postaviti 'bambusovy ostev'" 3 pages on scratch-build-

ing a Japanese 'suicide plane' including scale drawings and 5 photos of completed model. "Flight lieutenant Thorsteinn Elton Jonsson" 5 pages on an Icelandic Ace including 5 photos, victory list, and 3 multi-view color drawings (Spitfires and Mustang).

## DENMARK

**NYT** (IPMS Denmark, c/o Bjorn Jensen, Rosenvaegets Alle 6, 2100 Kobenhavn 0; 4 issues for 90 Dkr surface, 100 Dkr airmail). Each issue includes a two-page English summary.

#77 (40 pages) "Supermarine Sea-Otter i Danmark" 9 pages including 4 photos and 5 pages of multi-view drawings. "MBR-2" 2 pages (in English) including one side-view drawings of Russian flying boat.

#78 (48 pages) "Elleniki Vassiliki Aeroporia 1940-1941" 2 pages including order of battle and one photo of Hs.126 model. "Flyvestation Auno Anno 1941" 1 pages including 5 photos of Luftwaffe Fw-44.

## ENGLAND

**IPMS MAGAZINE** (Ernie Lee, 51 Ball Road, Hillsborough, Sheffield, South Yorkshire S6 4LZ, 6 issues for £20.00 (US subscription agent: Wise Owl Publications, 4314 West 238th St., Torrance, CA 90505; since exchange fluctuates write Joe for current rates).

6/97 (40 pages) "Battle of Britain Memorial Flight Spitfires" 4 pages on modeling the BoBMF Spitfires including 4 photos of the prototypes, a 2-view drawing, and sketches. "Gloster Meteor Mk I" 7 pages on converting the Airfix 1/72 Mk III into a Mk I including 8 photos of the model, scale multi-view drawings, color-scheme drawings, sketches of details, and exploded construction diagram. [Editor's note: An excellent example of how to illustrate a conversion article.]

1/98 (48 pages) "WH904: The Story of a Canberra" 3 pages including 4 photos and 3 side-view drawings. "Stop-gap Fighter" 3 pages on modeling the Blenheim IF and IVF including sketches and 3 photos of the models. "Back to Basics" a 5-page primer on scratch building with a 1/48-scale Volksplane and a 1/72-scale Spitfire 22-24 as examples. [Editor's note: A provocative article. Highly recommended reading.]

2/98 (48 pages) "Wessex Wanderings" 9 pages with 14 side-view drawings (all RAF/RN except one RAN) and sketches of details. "Focke Wulf FW 190A-5/U14" 5 pages on building the MPM kit including 6 photos of model.

**PLASTIC KIT CONSTRUCTOR** (PAMAG (Publications) Ltd., 3 Lowfield Court, Old Forge Business Park, Sark Road, Heeley, Sheffield, S2 4HG; 4 issues £18.00. In USA/Canada order from J.J. Daileda, 4314 West 238th St., Torrance, CA 90505; since exchange rates fluctuate write Joe for current rates).

#52 Winter 1997/8 (32 pages) "Falcon's 1:48 vacuform kit of the Martin Baker MB5" 8 pages including 17 photos of the model and some great hints on refining vacuform models. "KoriKit 1:72 SAAB 340" 3 pages on building a civil airliner including 4 photos of the model. "Nakajima E8N2" 2 pages on building Aviation Usk's 1/72/scale Dave including 2 photos of the model. Many other building/review articles come up to a page in length.

## FINLAND



**Finnish Air Force Special Interest Group**, c/o Niles R. Treichel, Ludigstr. 13, 27432 Bremervoerde, Germany.  
No. 10 (7 pages) "Finnish Shavrov Sh-2" short, but informative, text and 2-view drawing. "SAAB B-17" short review of Marvok kit and 3-view drawing of Finnish target-tow a/c 'SH-1'.

**IPMS-MALLARI** (IPMS Finland, PL 798, 00101 Helsinki 10; 6 issues \$20.00, no check accepted due to the high redemption costs).

#121 5/1997 (24 pages) Nothing of small-air-force interest.

#122 6/1997 (20 pages) "Cobrat osa 2" 7 pages including 12 side-view drawings of Bell AH-1 variants.

**SUOMEN ILMALUHIKALLINEN LEHTI** (InScale 72, Makelankatu 5B10, 00550 Helsinki; Europe \$30, elsewhere \$35; payment by International Postal Order or in cash; no cheques of any kind accepted because of high redemption rates). Each issue includes a 2-page English summary.  
1/1998 (24 pages) "Percival Proctor" 4 pages on Finnish civil a/c including 5 photos, a 3-view scale drawing, and sketches of interior details. "Test Pilot's War" 3 pages including 3 photos (Fokker D.XXI, Viima II, & Tiger Moth). "Ship-borne Balloons" 4-page story of 1894 use of balloons to find a sunken ship. "Finnish Flying Corps 1919 Registration System" one page including table and one photo of Breguet 14 '2C.467' (2 seat, combat biplane, France, a/c 67).

## FRANCE

**Air Zone**, Le Nouveau Mensuel de l'Air! (Air Zone, BP n.49, 28210 Nogent-le-Roi, France. A one-year subscription for 9 regular issues and two special issues is 405FF. Payment preferably by check drawn in FRF on a French bank, by draft or postal giro.) Each issue contains book and kit reviews and a one-page summary in English.

#20 (52 pages) "CASA-Nurtanio CN 235M" 2 pages including 3 photos (Spanish & Dutch). "Campagne de tir au-dessus du golfe de Botnie" 8 pages including 16 photos of Finnish a/c (Saab 35S, Mi-8T, Hawk, Hornet, MiG-21bis, & Learjet 35). "Des Pantheres chez les Cochons" 6 pages including 8 photos of French Mirage 2000 & USAF F-15. "Le crepuscule du Fougua" 6 pages including 12 photos of French Magisters. "Retour au 1/3 'Navarre'" 4 pages including 10 photos of French Mirage 2000. "Dernier salut au Su-20 polonais" 7 pages including 13 photos.

**JETS: Toute l'Aeronautique Moderne** (39 rue A. Briand, 62200 Boulogne Sur Mer, France. 420F for 12 issues).

#25 Janvier 1998 (52 pages) "25 annees de Mirage IIIEA en Argentine" one page including 2 photos. "Edwards Open House" 6 pages including 11 photos. "Le Cieh 341 'Maurienne'" 6 pages including 8 photos of French helicopters (Fennec, Alouette III, Ecureuil, & Puma). "La Force Aerienne Dominicaine" 3 pages with 6 photos of a/c of the Dominican Republic (A-37, T-41, T-34, PA-31 Navajo, Dauphin, & Bell 205). "Les Mirage Pendant la Guerre des Six Jours" (1ere partie) 8 pages including 9 b&w photos. "Les Super-Maytere" 9 pages including 3 color photos and 11 b&w photos. "Seigneurs de la Nuit" 4 pages 8 photos of RAF and Spanish Harriers (AV-8B).

#26 Fevrier 1998 (52 pages) "Le Centre d'Essais en Vol de Bretigny" 6 pages including 8 photos. "L'EC 2/5 'Ile de France' en campagne de tir a

Solenzara" 4 pages including 8 photos of French Mirages. "Soleil Nostalgia & Crusader!" 4 pages including 6 photos (French F-8). "75eme Anniversaire de l'Irish Air Corps" 6 pages including 9 photos (Fouga Magister, Alouette III, CASA CN-235, Gazelle, Seaking, FR.172, & SF 260). "Le Breguet Alize" 8 pages including 18 b&w photos. "Les Mirage pendant la Guerre des Six Jours" (2eme partie) 8 pages including 10 b&w photos. "Les Sikorsky SH-60B Seahawk de la marine espagnole" 5 pages including 5 photos. Two color side-view drawings of French Super Mystere (left over from last month?).

#27 Mars 1998 (52 pages) "Les 10000 Heures de vol sur Casa 235 a l'ET 1/62 'Vercors'" 2 pages including 3 photos. "Espagne: la surveillance de la peche en mer" 3 pages including 6 photos (Agusta A-109). "La Force Aerienne Populaire du Vietnam" 12 pages including 16 photos (MiG-21, L-39, Ka-27, Su-22, An-24, F-5F, & AT-37). "Le Breguet Alize" 14 pages including 19 photos, 3 side-view drawings of variants, 3 pages of 1/72-scale drawings, and 2 color side-view drawings. "Les Morage pendant la Guerre des Six Jours" 5 pages including one photo. "Dassault 450 Ouragan: Maquette en resine de JMGT au 1/48eme" 4 pages including 8 photos of model.

#28 Avril 1998 (52 pages) Miscellaneous color photos: Burmese Mi-8 & Argentine A-4AR. "La Base Aerienne Cold Lake" 6 pages including 9 photos (CAF CT-33, CF-18, CF-104, CH-146). "L'Aeronautique Navale Thailandaise" 11 pages with 20 photos (AV-8 Harrier, Cessna U-17B, Pilatus PC-9, Fokker F.27, Grumman S-2F, Bell 412ST, Cessna O-2-377, Cessna O-1G, GAF N-22M Search Master, LTV A-7E, Sikorsky S-70B Seahawk, & Dornier 228). "Le Squadron 350 d'Ambiorix' Belge a 'Dynamic Mix' en Grece" 5 pages including 6 photos of Belgian and Greek F-16. "Douglas F3D Skyknight" 13 pages including 17 photos, a 2-page cutaway drawing, and 3 pages of 1/72-scale drawings. "Le Breguet Alize" 9 pages including 11 color photos and a 2-page cutaway drawing.

**AVIONS: Toute l'Aeronautique et son Histoire** (39 rue A. Briand, 62200 Boulogne Sur Mer, France. 420F for 12 issues).

#58 Janvier 1998 (52 pages) "Retros du Mois" one page with photos of Maillet MN type A and Maillet 201. "Le Fairey Albacore" (3eme partie) 6 pages including 13 photos and 4 color side-view drawings. "1918: des hydravions bulgares aux couleurs francaises" 2 pages including 3 photos. "ANF Mureaux" (4eme partie) 11 pages including 22 photos, a 2-page cutaway drawing of Mureaux 117, and 2-page multi-view 1/72-scale drawing of Mureaux 115. "Du NA-16 au T-6: Premiere epoque - les trains fixes" 6 pages including 19 photos of USAAC a/c and a color cover of a French NA 57. "Les Vultee V-1A espagnols" (2eme partie) 4 pages including 12 photos. "Le Dewoitine D.520 d'Hasegawa au 1/72eme" 3 pages including 8 photos of the model.

#59 Fevrier 1998 (52 pages) "Courier des Lecteurs" 3 pages including 7 color photos of Greek Do-28D and 4 (poor) b&w photos of Greek Avia B-534. "Retros du Mois" one page with one photo each of Bulgarian Do Y and Fw 58. "Le Curtiss-Wright 19R" (1eme partie) 4 pages including 8 photos (one Cuban) and a side-view drawing. "ANF Mureaux" (Seme partie) 10 pages including 16 photos, a 2-page cutaway drawing of Mureaux 115, 2 pages of 1/72-scale drawings of Mureaux 117, and 4 color side-view drawings. "Du NA-16 au T-6: Premiere epoque - les trains fixes (2eme partie)" 4 pages including 15 photos (USAAC & 9 Dutch).

"Les Morane-Saulnier Type G en russie" 8 pages including 21 photos, color 3-view drawing, and 4 color side-view drawings. "Le Lockheed P-38 Lightning de Dragon au 1/72eme" 3 pages including 7 photos of the model.

#60 Mars 1998 (52 pages) "ANF Mureaux" (6eme partie) 9 pages including 20 photos, 4 color side-view drawings, and table listing individual a/c. "Gloster Gladiator" (1eme partie) 11 pages including 22 photos (all RAF), 2-page cutaway drawing, 2 pages of 1/48-scale drawings, and cover painting of Norwegian Gladiator. "Le Curtiss-Wright 19R" (2eme partie) 5 pages including 19 photos (Bolivia, China, Ecuador, & Cuba). "Du NA-16 au T-6: Premiere epoque - les trains fixes" (3eme partie) 6 pages including 21 photos (USAAC, Sweden, RAAF, & Argentina). "L'Albatros D.III Offag: de Hit Kit au 1/72eme" 3 pages including 10 color photos of the model.

## GERMANY

**MITTEILUNGEN** (IPMS Germany, Bergengruenstrass 5-7, D-1000 Berlin 38; 12 issues DM 60.00 Europe, DM 65.00 USA, DM 70.00 Japan, DM 75.00 Australia).

6/97 (40 pages) Nothing of small-air-force interest.

1/98 (40 pages) Nothing of small-air-force interest.

## GREECE

**NEA** (IPMS-Greece, PO Box 79167, 175 05 Amfithea, Athens) 4 issues \$25.00 for first year, \$20.00 for next year. English summary no longer included. [Back issues are available from IPMS-Greece.]

2/96 (32 pages) "Fairey IIIIF" 7 pages including 10 photos, sketches of details, and side-view drawing of 'N2'.

3/96 (32 pages) "T-2E Buckeye" 76 pages including 5 color photos, 5 b&w photos, and 2-view color drawing. "Building Biplanes" 7 pages (although in Greek, the photos and sketches illustrate some outstanding techniques).

4/96 (32 pages) "Building Biplanes" 6 pages of helpful hints. "Greek Navy Helicopters" 5 pages including 4 color and 2 b&w photos (Alouette III & Bell 212).

1-2/97 (48 pages) "349 M.A.H." 3 pages including 7 color photos of a colorful Greek RF-5A. "Building Biplanes" 3 pages including 3 color photos of models of Greek a/c (Breguet 14, DH-9, & SPAD 13). "Greek F-84 Thunderstreak" 4 pages including 7 color and 3 b&w photos. "Greek F-16" 3 pages with 11 color photos.

3-4/97 (48 pages) "Greek AH-64A + Apache" 3 pages including 3 color and 2 b&w photos. Color photos: Greek AB-205, C-47, AB-206, & P-3B).

## ITALY

**NOTIZIARIO DI PLASTIMODELLISMO** (CMPR Club Modellismo Plastico Ravenna, PO Box 96, 48015 Cervia) Four issues L.45.000 sea mail or L.50.000 via air mail. Payment by cheque or IMO, Italian funds preferred.

4/97 (36 pages) "Storia di sei Aeroplani" 22 pages on the IMAM Ro.36 including 6 photos, side-view drawing of '132-1', 14 pages of sketches of construction detail from original manual, and an inserted 1/72-scale 3-view drawing with cross sections.

**JP-4** (JP-4, CP 1550, 50100 Firenze; L. 27.000 Europe, L. 30.000 elsewhere).

#11 Novembre 1997 (100 pages) Color photos: Swiss Mirage IIIS 'J-2308', Croatian MiG-21bis '124', and Qatar Mirage 2000 'QA86. "36th Stormo"

4 pages including 2 color side-view drawings (Tornado & F-104S).

#12 Dicembre 1997 (100 pages) Color photos: Brunei Sikorsky S-70C, Spanish Mirage F.1 '14-50', & Danish F-16A "E-004". "61st Stormo" 4 pages including 2 color side-view drawings (MB.339A & MB.326).

#1 Gennaio 1998 (100 pages) Color photos: Ecuador AT-33 'FAE519', AT-37 'FAE375', & Strikemaster, and Dutch AB.412 'R-01'. "14th Stormo" 4 pages including 2 color side-view drawings (G.222 & C-47). "I voli del Marina I" 5 pages on the Italian Dornier Wal that participated in the 1928 search for the survivors of the airship 'Italia' that crashed on the polar ice including 11 photos.

#2 Febbraio 1998 (100 pages) "4<sup>o</sup> Stormo" 4 pages including 2 color side-view drawings (F-104S/ASA & CL-13 Sabre). "La riattaccata" 6-page about experiences of Italian airman including 10 photos (F-51, T-6, & G.59). "I relitti di Grenada" one page including 4 photos of derelict a/c (An-26 and An-2) on Grenada.

#3 Marzo 1998 (100 pages) Miscellaneous color photos: Malaysian Sikorsky S-61 & Egyptian Kaman SH-2G(E). "A Casa dopo il Mare" 4 pages including 9 photos of a USAAF P-40L recently recovered from the waters off Anzio. "70<sup>o</sup> Stormo" 4 pages including 5 photos and 2 poster-size color side-view drawings of SF.260AM & P.166M. "Orbetello e gli 'Atlantici'" 4 pages including 10 'then and now' photos of base from which the mass flights of the S.55 originated. "Addio 'Vagone Volante'" a 6-page farewell to the C-199 including 14 photos (Taiwan AF & California fire bombers). "Stagione di Air Show in Giappone" 2 pages including 5 photos (Japanese T-33, F-15, etc.)

## POLAND

**AEROPLAN** (Agencja Lotnicza "Altair, ul. Warecka 11/36, 00-034 Warszawa.)

2/97 (44 pages) "Bulgarskie Karasie" 2 pages including 7 photos of Bulgarian PZL P.43 Karas. "Pozegnanie Su-20" 4 pages on Polish Su-20 including tables and 7 b&w and 6 color photos. "Spitfire'y Gabszewicza" 6 pages on the Spitfires flown by BrigGen Gabszewicz including 15 photos and 3

color side-view drawings (plus 3-page insert English summary with an original color photos). "Polish Piper Cubs" 3 pages with 15 side-view drawings.

3/97 (44 pages) "Polacy w Norwegii" 2 pages with 10 color photos (Polish MiG-21 & Yak 30; Norwegian F-5, MFI 17, Sea King, & AB-412; Slovakia An-26; and Swedish SAAB JA 37). "Byl RAZ sobie Lynx ..." 2 pages with 20 color photos showing the crash of Danish Lynx 'S-170'. "Slowackie Polonica" one page with 6 photos of Slovak An-2 and Mi-2. "Dzien Hurricanow" 6 pages on 303 Squadron Hurricanes including 9 b&w and 3 color photos and 5 color side-view drawings. "Defiant bez tajemnic?" 3 pages including 6 photos and color side-view drawing of Polish Defiant 'EW-K'.

## USA

**Chine Lines** (IPMS Seaplane SIG, c/o Bill Devins, 107 Troy Hills Rd., Whippany, NJ 07981. \$10.00 USA or \$13.00 overseas for 4 issues).

#14 Fall 1997 (16 pages) "Macchi's Maritime Mania" 4 pages including 4 photos and 8 side-view drawings (L40, M.3, M.5, M.8, M.7ter, M.20, M.41, & MC.100). "The Macchi M.18" 2 pages including 3 side-view drawings (Swiss, Italy, & Paraguay). "Macchi M.18R" a one-page review of the Dekno kit. "Lublin R-VIII Floatplanes" a one-page review of the Broplan kits. "Macchi MC.72" one-page history and 3-page review of kits from 1/200 to 1/32 scale. "Macchi Schneider Race Finishers" One page with side-view drawings (M.7bis, M.7, M.17bis, M.33, M.39 & M.52R).

**WWI AERO** (15 Crescent Rd., Poughkeepsie, NY 12601; 4 issues \$30.00 USA or \$30 overseas).

#159 Nov Feb 1998 (148 pages) "Ornithopters" 20 pages including 31 photos and 31 drawings. "Aeronautica Romania Pre-1941 (Part 2) Aurel Vlaicu" 12 pages including 20 photos and 2 small 3-view drawings. "Santos-Dumont Demoiselle" 11 pages including 23 photos and a 3-view drawing. "The Fokker Gliders" 4 pages including 12 photos. "Royal Aircraft Factory Farnborough" 5 pages including 10 photos and a 3-view drawing. Drawings: Curtiss HS-1L, Sopwith Torpedo Bomber, Al-

batros B.II & C.X, and Dayton Wright a/c.

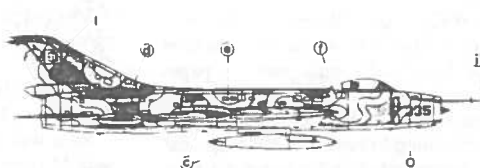
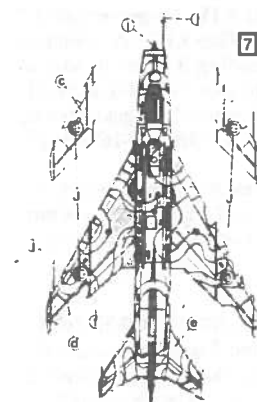
**SKYWAYS** (15 Crescent Rd., Poughkeepsie, NY 12601; 4 issues \$30.00 USA or \$30.00 overseas.).

#45 Jan. 1998 (84 pages) "General Aviation's Clark GA-43" 12 pages including 20 photos and 3-view scale drawings. "The Seversky X-BT" 11 pages including 7 photos and 2 general arrangement drawings. "Menasco Aircraft Engines and their Air Racing Heritage" (Part 2) 9 pages including 17 photos. "Fokker in the United States" (Part 2) 17 pages including 21 photos and 3 pages of drawings of the F.10. "Anacostia Flight Test: Belanca XSF-2 Scout" 5 pages including 9 photos and a 3-view drawing. "Navy-Wright NW-1 Racer" 5 pages including 7 photos and 2 pages of scale drawings.

#46 Apr. 1998 (84 pages) "Log of a Path Finder: The Flight of Lt. Zimmermann and his Aeromarine Model 40" 13 pages including 14 photos and 3 pages of drawings of the Model 40 & 50. "The case of the Missing Amphibian: The Curtiss-Wright Junior Amphibian, The CW-3 Duck" 7 pages including 8 photos and a 3-view drawing. "Details: Curtiss TS-1" 17 pages including 8 photos and 10 pages of detailed construction drawings. "A Variable Camber Wing for the Aeromarine Model WM - A Modified DG-4 Mail Plane" 4 pages including 2 photos. "Anacostia Flight Tests: Consolidated Model 31 Flying Boat" 6 pages including 7 photos and 3-view drawing. "The Story of the Fleetwing F-101" 3 pages including 5 photos. "Los Corsarios Azarte: Mexican-Built Corsairs" 4 pages including 7 photos.

**ESM 72** (Model-Aire International, PO Box 159, Olema, CA 94950. Quarterly. \$24.00 per volume. \$30.00 outside the USA.)

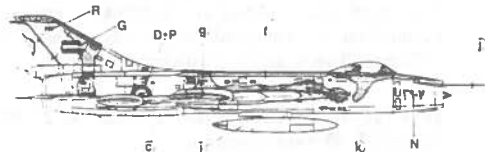
Vol 2, No.4, Winter 1997 (68 pages) "Aircraft Updates" 6 pages. "Aircraft Kit Listings T-Z" 33 pages. "Vehicle Updates" 2 pages. "Vehicle Kit Listings R-Z" 16 pages. "Ships & Boats Updates" 1 page. "Rockets, Missiles & Spacecraft Updates" 1 page. "Artillery Updates" 1 page. "Figures Updates" 1 page.



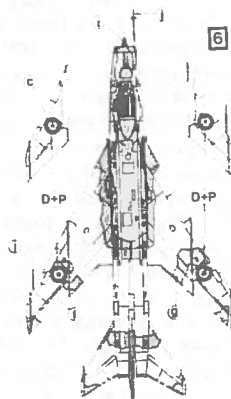
7 Su-7BMK Fitter A, Algerian Air Force, operating from Egyptian airfields during the Ramadan War, October 1973.

See decal review on page 29

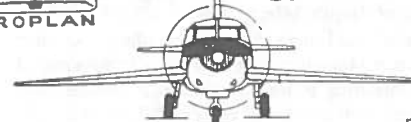
See kit review on page 28.



6 Su-7BMK Fitter A, Syrian Air Force, during the Ramadan War, October 1973.



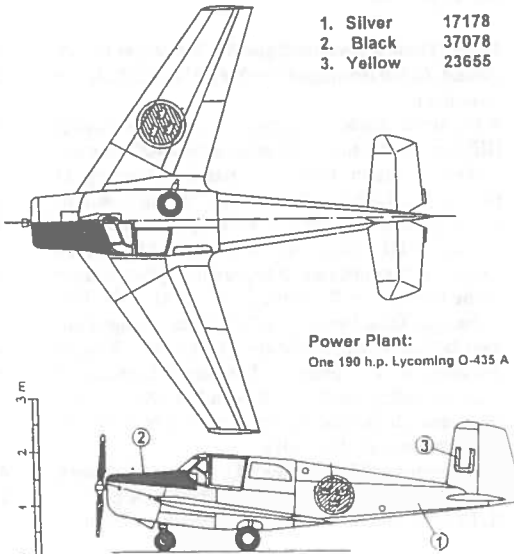
## SAAB 202



FS 595A

- |           |       |
|-----------|-------|
| 1. Silver | 17178 |
| 2. Black  | 37078 |
| 3. Yellow | 23655 |

Power Plant:  
One 190 h.p. Lycoming O-435 A



# Heinkel's Hansa Heritage and the Swedish S-Planes

Bill Devins

For the German aviation industry, WW I ended much the way WW II would, with a severe curtailment of aircraft manufacturing. The giants of Germany's wartime aeronautical talent turned elsewhere: Prof Dr Claudius Dornier moved his operation to Switzerland; Anthony Fokker returned to his native Holland, taking many banned aircraft parts with him; Dr Richard Vogt turned up in Japan; Prof Hugo Junkers took his genius to Russia; and Ernst Heinkel eventually established a subsidiary in Sweden. Though all of these men would make a reputation designing seaplanes, none would be more prolific or successful than Ernst Heinkel.

## Establishing the Pedigree

Ernst Heinkel, born in 1887, had joined the LVG firm of Johannisthal in 1911. Studying under Franz Schneider, Heinkel was largely responsible for the design of the LVG B I. He joined the Albatros-Werke in 1913, and there designed the B I and B II two-seater biplanes, but moved on within a year. Austrian millionaire Camillo Castiglione appointed Heinkel chief designer at his newly acquired Hansa und Brandenburgische Flugzeugwerke GmbH. Here Heinkel spent the 1914-1918 War producing aircraft, principally naval types, for the air services of Germany and Austria-Hungary. His first creation for Hansa-Brandenburg, the NW, was a twin-float biplane based on his Albatros designs. Heinkel continued to design many novel and exceptional aircraft, including the famed star-strutter group of single-seat fighters, which comprised landplane (D I), floatplane (KDW), and flying boat (CC, the owner's initials) derivatives. One of his last projects for Hansa-Brandenburg, the diminutive, collapsible W 20, was the first aircraft designed to be carried by, and launched from, a submarine.

Heinkel's finest achievement of the war years was the development of an outstanding series of twin-float seaplanes. The excellent W 12 biplane was the start of this successful string of bi-place fighting floatplanes. He supposedly sketched the W 12's monoplane successor, the Hansa-Brandenburg W 29, on a wine list while having dinner. The W 33, his last major design for the German Navy, was essentially an enlarged W 29. Heinkel and others were to continue evolving this superb low-wing design well into the post-war years. Before the doors of Hansa und Brandenburg closed soon after the war, Denmark had acquired a license to build the W 29, and both Norway and Finland were tooling up to build the W 33. Even the older biplane W 12 was adapted by Van Berkel in Holland as the W-A. Heinkel joined the small Caspar-Werke at Travemünde in 1921, and immediately picked up where he had left off at Hansa-Brandenburg designing submarine-borne aircraft. Despite the ban on the manufacture of military aircraft in Germany, the Caspar U 1 was ordered by the USN, which eventually gave up on the whole notion of submarine-launched aircraft. The Caspar U 2, on the other hand, went to the Imperial Japanese Navy, which became the only service to fully embrace the concept, eventually taking it to its peak with the Aichi M6A1 Seiran of 1943.

## Swedish Sea Hounds

Soon Heinkel returned to his successful twin-float bi-place monoplane configuration with the Caspar S I, basically an up-engined W 29, which was selected by the Swedish Navy as its

standard reconnaissance type. Heinkel presently founded his own self-named firm in Warnemünde, Germany. Additionally, to circumvent treaty limitations on the construction of military aircraft in Germany, Heinkel, with the encouragement of Carl Clemens Bucker, decided to establish a plant in Sweden. He and Bucker set up a Swedish subsidiary called Svenska Aero AB to build the Caspar S I, now called Heinkel S I, for the Marinen, or Swedish Navy. (Svenska Aero AB was not the ancestor of SAAB, which was Svenska Aeroplan AB.) Litigation with Caspar followed over the rights to the S I, but eventually Heinkel started producing his own aircraft. The Swedish Navy assembled their first few S Is from German-manufactured parts, but by 1923 Svenska Aero was producing the components.

The designations of the Heinkel seaplanes become very confused at this point. The earliest aircraft were designated S I, S II, and S IIa. For some reason, the Marinen insisted on dubbing the Heinkel-designed monoplanes Hansa-Brandenburg types, probably due to their resemblance to the famous W 29. The Maybach-engined Heinkel S I (alias Caspar S I and later Heinkel HE 1) thus became known as the Hansa-Brandenburg typ 31 and typ 32 in Sweden. Typ 31 designated a plane assembled from German-manufactured parts, while typ 32 represented a machine from Svenska Aero. When a Rolls-Royce Eagle-powered version was introduced, it was designated Heinkel S II (later HE 2) in Germany, and Hansa-Brandenburg typ 42 by the Swedish Navy. To add to the confusion, it is even listed in some sources as the Caspar S II! The later Heinkel factory classifications took the form of HD for Heinkel Doppel-decker = Heinkel Biplane, or HE for Heinkel Eindecker = Heinkel Monoplane, thus the capital "E" in these designations. One of the most curious deals made to equip the clandestine German military after WW I went through Severa GmbH, a company set up in Berlin as a front for military aircraft purchases. In 1923, in utmost secrecy, six German-manufactured seaplanes were assembled and tested at Svenska Aero. Four more were built at the Swedish plant. Although these aircraft had the fuselage and engine of the S II they were always known as HE 1s. They may have had the flying surfaces of the S I. All ten of these secret seaplanes were sequestered in Sweden until their delivery to Germany in 1926!

Another export customer for Heinkel's Swedish-built seaplanes was Latvia. In 1926 27 the Letts took delivery of six Eagle-engined HE 4 (S IIa / Hansa-Brandenburg typ 47) three-seaters. They were numbered 10, 11 and 18 21 in Latvian Navy service. Only one S IIa, s/n 247, was used by the Swedish Navy.

The last Heinkel float monoplane type built by Svenska Aero was the HE 5 of 1927. With this model, Heinkel finally dropped the S-series designations. But, since all Swedish military aviation had come under control of the Flygvapnet (the Royal Swedish Air Force) in 1926, the HE 5 received the new Flygvapnet designation S 5 (S for spaningsflygplan = reconnaissance aircraft)! Five versions of the radial-engined HE 5 were delivered to the Flygvapnet: the Bristol Jupiter-powered S 5 (HE 5/s) and S 5A (HE 5/t), and the Mercury-engined S 5B, S 5C, and S 5D (variants of the HE 5/t). [I have been unable to determine the significance of the /s and /t suffixes - WCD]. Naturally, all existing Swedish aircraft had to be re-designated to Flygvapnet standards; thus the HE 1 became the S 2, the HE 2

the S 3, and the HE 4 the S 4. All this number-juggling didn't keep Flygvapnet personnel from continuing to use the sobriquet Hansa to refer to the Heinkels throughout their service lives! Most of these floatplanes served with F 2 (F for Flygflottilj = Flying Flotilla, generally translated as Wing ) at Hägernäs, outside of Stockholm.

The muddled aircraft manufacturing situation of the post-WW I period is reflected in the number of clandestine factories, subsidiaries, and government workshops used to manufacture and/or assemble aircraft and components. This differentiation is important. Although Caspar/Heinkel and Svenska Aero supplied the S I/HE 1 parts, the Marinen had most of them assembled at the Navy Yard's Torpedo Department in Stockholm (TDS). Altogether, TDS assembled ten Marinen HE 1s and built one new HE 2 and a second from two wrecked HE 1s before the workshop was moved to Västerås in 1927, where it became the Central Flying Workshops/Västerås (CFV, later CVV). This plant took over the construction of S 5 variants when Heinkel returned to Germany and Svenska Aero stopped supplying his designs after building four S 5s and ten S 5As. CFV delivered twelve S 5As, the lone S 5B, nine S 5Cs, and four S 5Ds between 1929 and 1937.

### Bettering the Breed

The Swedish Heinkels utilized the same basic wooden fuselage and float structures and fabric-covered flying surfaces which Heinkel had originally used on the W 12. The HE 1, essentially an enlarged W 33, featured a rounded tailplane with extending horn-balanced elevators; the ailerons were similarly balanced, and the wing incorporated trailing-edge taper only. The rudder was larger than on previous models, and for the first time it extended above the fuselage top. On the Svenska-built Hansa-Brandenburg typ 32 examples (s/ns 36-41), under-nose Lamblin radiators replaced the car-style frontal model of the typ 31 (s/ns 31-35), the rudder had no lower horn extension, and there were other minor changes. The HE 2 typ 42 was the same size as the HE 1, except for the deletion of horns on the re-designed ailerons. The lower rudder horn reappeared, and the Rolls-Royce Eagle engine sported a car-type radiator integral with the fuselage. Although retaining the same dimensions as its predecessors, the HE 4 typ 47 provided a cockpit for a third crew member. The rudder was slightly enlarged yet again, and for the first time the wing did not show any taper, although the trailing edge curved into the tip for about half its length. At various times, the Swedish S 3s and S 4 sported four-bladed propellers, formed by superimposing two-bladers at right angles to one another.

The tri-place HE 5/s (S 5) introduced air-cooled radial engines to the tried and true formula. The shortened fuselage, now a fabric-covered steel-tube structure, supported a larger, more angular empennage at one end and an uncowled 9-cyl Bristol Jupiter engine at the other. Except for a somewhat wider center-section cut-out, the wings were identical to those of the HE 4. The HE 5/t (S 5A) was characterized by improved streamlining: curves returned to the tail surfaces, the fuselage sides were slightly bowed with multiple stringers, and the trailing edge of the reduced-span wing was so rounded off as to appear tapered again. A fixed 8mm machine gun could be mounted on the starboard side of the forward fuselage, synchronized to fire through the propeller disk.

Although retaining the same HE 5/t factory designation as the

S 5A, the S 5C and S 5D embodied many external improvements. The only difference between them was the variant of the NOHAB license-built Bristol Mercury engine they used: a 600hp Mk VIa in the S 5C and a 675-hp Mk VIIa in the S 5D. Both 9-cylinder radials were enclosed in Townend-ring cowlings and canted a few degrees to port. The Mercury VIIa of the S 5D introduced a three-bladed metal variable-pitch propeller. The cockpit openings were slightly enlarged and modified. The tail control surfaces lost their balance horns, and the stabilizer and elevators gained a smooth elliptical planform. For the first time on a seaplane of this family a dorsal fin was introduced. Another first was the use of rounded metal floats with deep-V planing bottoms. The single Mercury VI-powered S 5B, s/n 1477, was a transitional type, apparently mating the fuselage of the S 5A with the wings of the S 5C/D.

### Historic Hansa

One particular Hansa was to have an especially interesting career. S 5A s/n 271 was the 17th production S 5A, the seventh built by CFV. It was delivered to the Flygvapnet on 18 Jun 1930. A few years later, when the service was reorganized, her serial was changed to 471. She was still serving at Flygflottilj 2, one of the oldest aircraft in the Flygvapnet inventory, when WW II broke out. Ten years after she was built, less than two weeks into the Scandinavian war, s/n 471 made history. On 21 April 1940 a Luftwaffe intruder, He 111P B3 + FN WkNr 2515 of 5./KG 54, strayed across the Swedish coast. Lt Curt Andersson gave chase in his own Heinkel. As might be expected, the later Heinkel was also the faster, and the S 5A began falling behind the He 111. Andersson opened fire with his fixed machine gun, which jammed after only 28 rounds. It was good enough; the interloper was hit in the starboard engine, which caught fire. The He 111 crashed near Bremnäs, without loss of life. Of the 342 foreign aircraft which came down on Swedish soil during WW II, B3 + FN was the sole victim of aerial combat with a neutral; Lt Andersson was the only Swedish pilot credited with downing a trespasser during the war!

In 1942, s/n 471 was converted to an ambulance by replacing the rear two cockpits with a litter compartment. She had a long career as a stretcher-bearer, serving in that capacity until 21 May 1948, the last operational Swedish Heinkel by far. It's a shame that venerable old 271 was not preserved for posterity, a practice that started during the Flygvapnet's next decade, regrettably just too late for the last Hansa.

### Hansa Colors

Early Swedish Hansas were painted medium grey overall, often with silver-grey floats and black trim. The cowlings panels were in metal finish, probably anodized. Before the 1926 formation of the Flygvapnet the Hansas flew in Marinen markings. These normally consisted of three black crowns on the wings and fuselage, the latter usually on a white panel, and a blue and yellow Swedish War Ensign on the rudder. The aircraft number commonly appeared somewhere on the fuselage in black on a white panel. A black stripe on the floats marked the aircraft's balance point, used to help position wheeled dollies for moving the seaplane ashore.

During the 1930s the color for maritime types was changed to a darker battleship grey. Markings during this period were white roundels with black crowns, with the rudder vertically banded in yellow (forward) and blue. The aircraft number was usually

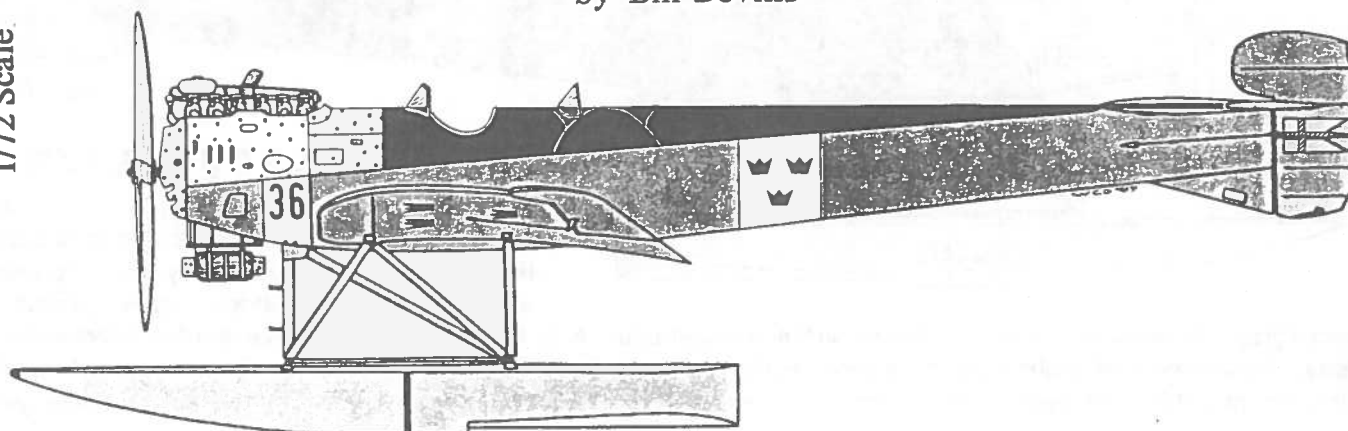


# *Svenska Aero AB Heinkels in Profile*

[Scrap views at half scale show wing insignia positioning (underside dotted).]

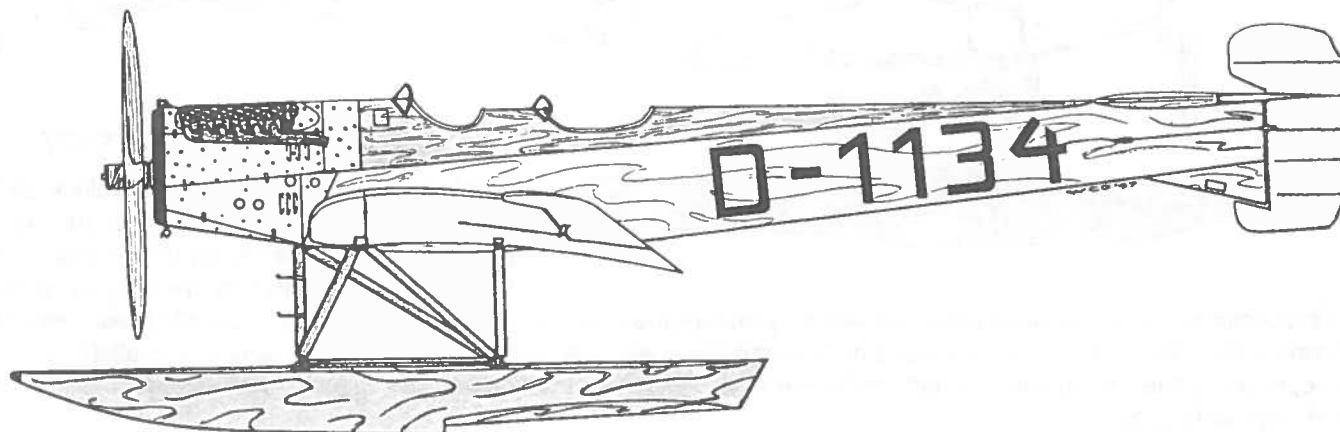
by Bill Devins

1/72 Scale



## **Heinkel S I (HE 1), 1923**

Also known as the "Hansa-Brandenburg typ 32" in Marinen service, this aircraft was assembled by TDS from Svenska Aero parts. Swedish Navy finish appears to be overall light grey with natural metal cowl panels and black turtledeck. All markings are black and white with blue and yellow Swedish Man-of-War pennant on the rudder.



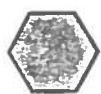
## **Heinkel HE 1, Germany 1926**

The first Swedish-built Heinkel for Germany was D-1134 c/n 202. Although called HE 1 in Germany, the aircraft has the configuration of the S II (so-called HE 2 or "Hansa typ 42" / S 3 in Swedish service) with an enlarged rear cockpit opening. The wings may have the balanced ailerons of the true HE 1; note the parallel main float struts and four-bladed propeller. Finish is natural linen, wood, and metal; turtledeck and floats may be painted. Black fuselage codes are the only markings.

## *Svenska Aero AB Heinkels Color Key*



Black



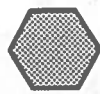
Light Grey



Natural Metal  
or Silver



Blue



Dark Varnished  
Wood



Dark Grey



Dark Olive  
Green



Silver-Grey



Natural Linen  
[White on Insignia]



Yellow



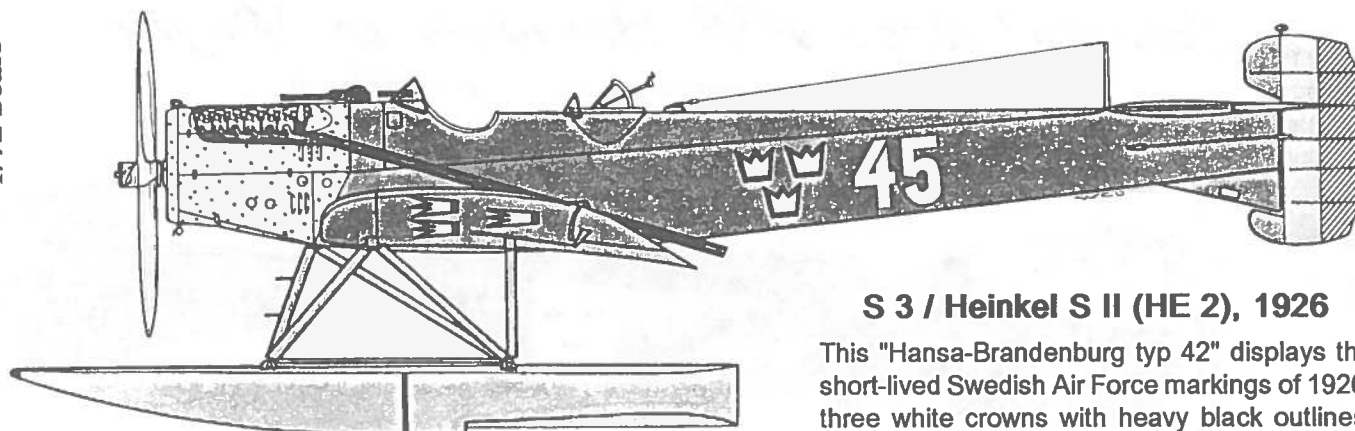
Clear Varnished  
Wood



Dark Red



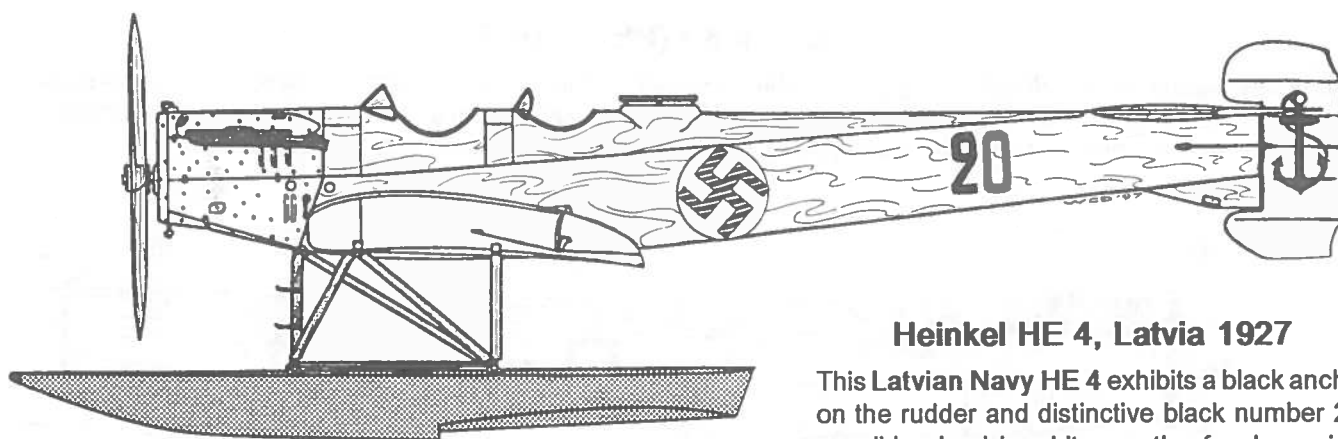
Light  
Blue-Grey



### S 3 / Heinkel S II (HE 2), 1926

This "Hansa-Brandenburg typ 42" displays the short-lived Swedish Air Force markings of 1926: three white crowns with heavy black outlines, and yellow (front)/blue striped rudder. Aircraft is

overall grey with metal cowl; white number 45 on the fuselage sides. Note the four-bladed propeller and extended exhaust pipes. The presence of a tube sight in the pilot's windscreen indicates that this aircraft may have been used for forward-firing armament trials, although the object mounted ahead of the cockpit could be a gun camera rather than a machine gun.

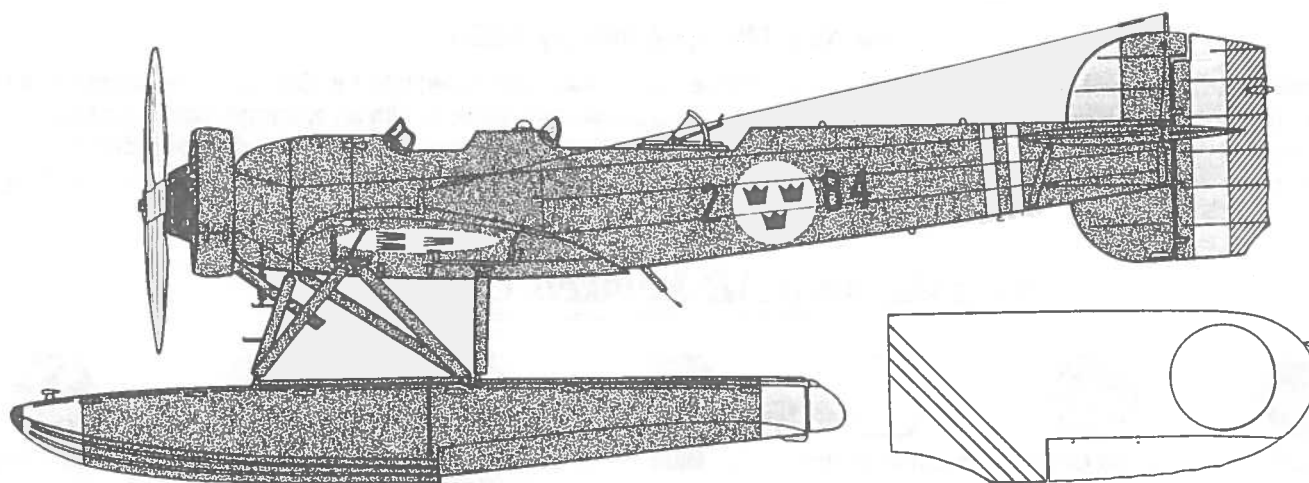


### Heinkel HE 4, Latvia 1927

This Latvian Navy HE 4 exhibits a black anchor on the rudder and distinctive black number 20, possibly piped in white, on the fuselage side.

Latvian dark red/white national insignia are likely

in six positions. The oversized wing roundels may feature the eccentric positioning common to Latvian machines of the period, with those on the upper starboard and lower port panels near mid-span. Once again, note the parallel float struts as opposed to the angled front supports on Swedish machines. The lack of aerials suggests that Latvian machines were delivered without radios.

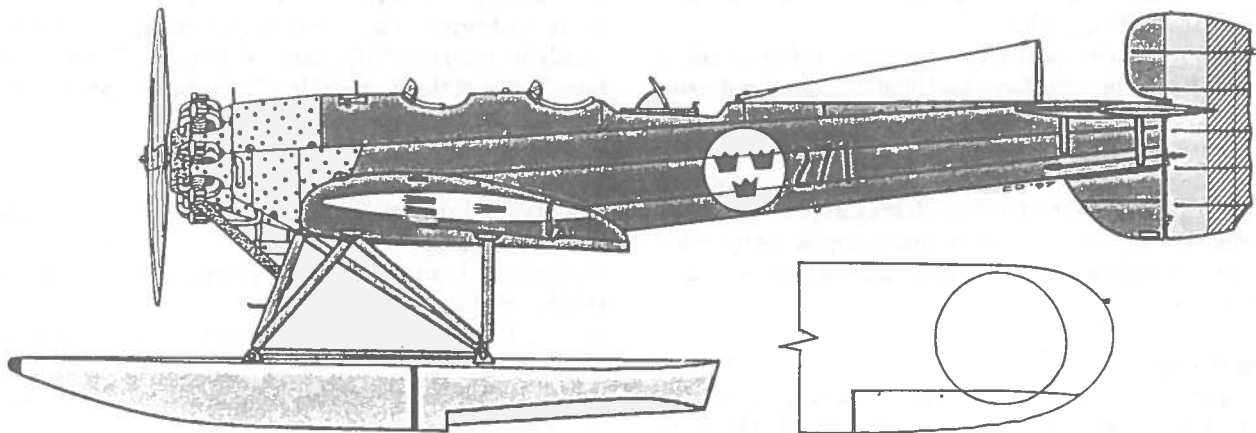


### S 5C / Heinkel HE 5/t, 1936

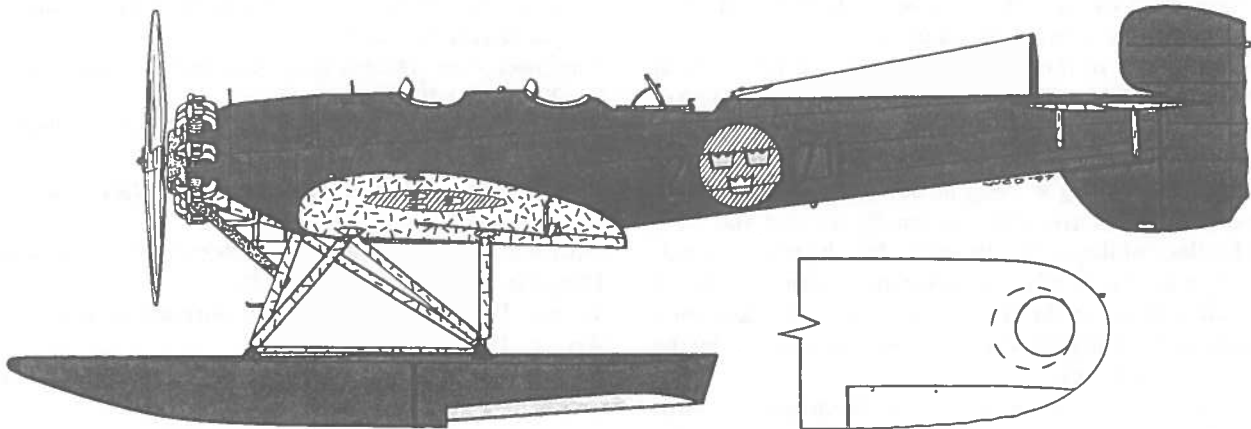
This overall dark ("battleship") grey aircraft displays the twin white bands of the 2nd *grupp* (flight) leader on the fuselage and as chevrons on the upper wings. The flight color is featured on the fin and float tips. Although the 2nd flight normally carried blue markings, these appear to be yellow. Bomb shackles and flare brackets are mounted beneath each wing.

# Historic "Hansa" - S 5A s/n 271

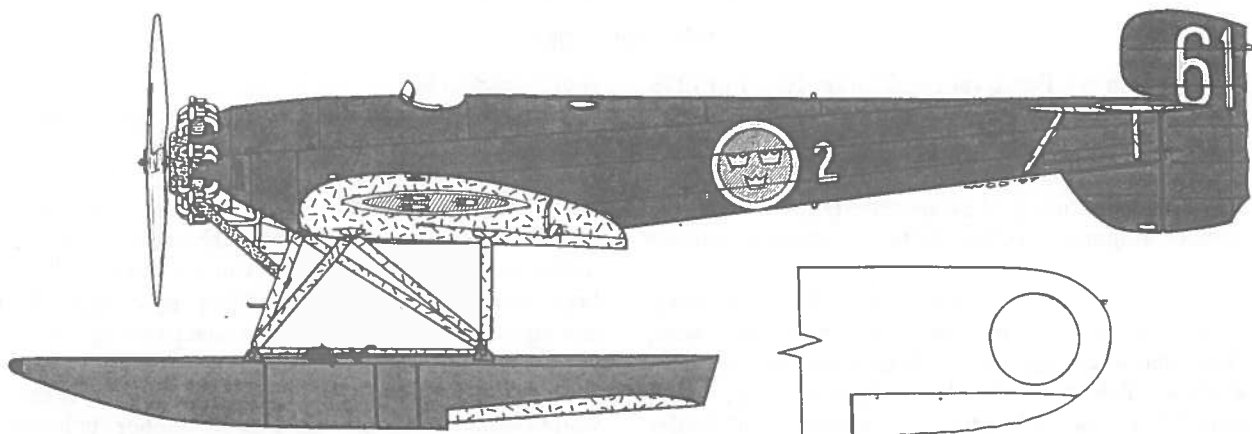
1/72 Scale



S 5A s/n 271 as delivered in standard finish: overall medium grey, with silver-grey floats. It wore the national markings adopted in 1927: three black crowns on a white disk, with yellow (forward) and blue rudder stripes. The serial and beaching gear balance line were painted in black. Note the orientation of the fuselage markings common to "Hansas".



By the time WW II broke out, s/n 271 had been re-serialled 471 and was serving with F2 in the 1937 camouflage colors common to virtually all Flygvapnet aircraft: dark olive green (FS 24096) uppersurfaces with light blue-grey (FS 26329) undersides. The markings change of 1937 took the color off the rudder and put it in the roundels, which were now light blue with three black-piped yellow crowns. Black codes, including a small "71" on the nose and very small "471" ahead of the tailplane, appeared on the fuselage. Float bottoms may have been yellow.



In 1942, '71 was converted to ambulance configuration. It retained the camouflage but by now had adopted the markings of 1939. The roundels all have a yellow ring encircling the blue disk. A yellow wing code (2) is painted on the fuselage, with a large yellow aircraft number (61) on the rudder. Note the lengthened front tailplane strut as on S 5C/D variants. There is an anchor lashed to port float top. Float bottoms are depicted as light blue-grey.

painted in black aft of the fuselage roundel. In 1937 the roundels were changed to blue and yellow, and the colors were removed from the rudder. Both wing and two-digit aircraft numbers now appeared on the fuselage sides.

The Heinkels started to receive the standard Flygvapen colors of dark olive green upper surfaces and light blue-grey undersurfaces in 1940. Yellow was specified as the float underside color on Swedish seaplanes after 1939, but it's difficult to verify photographically. Some sources indicate that late in the war some seaplanes were finished with dark grey uppers, but this is also difficult to see, even in color photographs. [Any more information on Swedish seaplane colors and markings would be most welcome - WCD].

### Eindecker Epilogue

Heinkel continued to squeeze the most out of his design with the HE 6 and HE 10, cabin monoplanes derived from the HE 5. An He 6 crashed on take-off from the Azores attempting a transatlantic crossing in November 1927. The mailplane HE 9 set six seaplane records. It led to the He 12 and He 58, which the steamship company Norddeutscher Lloyd catapulted from its liners Bremen and Europa 76 times between 1928 and 1932. None of these types was produced in quantity.

The most successful of the later designs was the HE 8, 22 of which were built for the Danish Navy as the HM II (Hydro-Monoplan, second type) from 1928 through 1938. This was a logical choice for the Danes, whose retiring HM Is were license-built Hansa-Brandenburg W 29s. The new seaplane reverted to the slab-sided, flat-bottomed wooden floats and the less-rounded fuselage of the earlier Heinkels, but the conventional-looking tail group was totally new. After more than ten years of Danish service, the last of the HM IIs were reportedly destroyed by saboteurs in Copenhagen in 1943 to prevent their use by the occupying German forces.

So the saga of the Heinkel-designed Scandinavian-built floatplanes ended in a hangar in Denmark. Ernst Heinkel would, of course, continue to be responsible for manufacturing seaplanes, among others, and his influence on aviation, both civil

and military, would continue to be felt around the world for many years. But never again would the world see the likes of the 20-year reign of the Heinkel floatplanes in the seas and skies of northern Europe. The sole surviving example of this significant family is the beautifully restored IVL A 22 (Hansa-Brandenburg W 33) at the Finnish Ilmailumuseo in Vantaa, just outside of the Helsinki airport.

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## Bulgaria's Heinkel 51

John MacGregor

The Royal Bulgarian Air Force received twelve He 51 in 1938. (Most Western sources give the delivery date as 1936, but the Bulgarian-sourced date of 1938 seems much more likely given the Luftwaffe's crash expansion in 1936 plus the needs of the Condor Legion at that time.) They apparently served with the 1st and 2nd Air Regiments before being relegated to training duties.

He 51 '11-7' is shown at its Air Force dedication ceremony. Color scheme is dark green over light blue with a red nose, fuselage flash, and wheel spat flashes. Wheel spat interior faces and all struts are light blue. Rudder is (from the top) white, green, and red. The drop tank seems to be natural metal. Codes are white and the lettering under the lower wing is black. This lettering, in Cyrillic script, reads 'SIM - EON' probably as a dedication to the then Bulgarian heir to the throne, Prince Simon. Propeller colors are: wood brown hub and blade roots, silver-grey spinner cap and blade fronts, matt black blade backs,

red(?) spinner tip.

As this aircraft was photographed at some kind of official ceremony, it is in an immaculate condition - not a trace of wear, tear, or exhaust stains.

He 52 '6' is shown with the 1941-style black Saint Andrew's cross on white square markings. Color scheme seems to be identical to that on '11-7' except that the white portion of the rudder has been over-painted, the spinner tip is apparently red, and there is a slight difference in the wheel spat painting. Fuselage codes are white (not black as drawn for convenience) and the underwing codes are black. The triangle on the fin is the standard white-outline with a tiny white serial number (unknown) inside. He 51 kits: There are only two, as far as I know. In 1/72 scale, the Hasegawa kit is at least 20 years old, but still a nice, accurate model, but lacking some of the fine detail (particularly inside the cockpit, which is very bare) of current Hasegawa models. In 1/48 scale, there is the Classic Airframes kit. I haven't seen this



Decals for the Bulgarian 51: '11-7' is shown in the 1938 Bulgarian AF roundel, which is basically a red Maltese cross with crossed swords on a white disc. This roundel is far too complicated for my limited drawing abilities. The best source for information on this roundel is Air Enthusiast #39. Fortunately, Blue Rider have just released a 1/72-scale sheet of Royal Bulgarian AF insignia (1937-41) which consists of 72 roundels in 5 different sizes. The underwing lettering and fuselage codes seem to be standard Luftwaffe WW2-style and I used Superscale Luftwaffe decals straight from the sheet (except for the 'M' which needs to be widened).

Luftwaffe standard.

A third Bulgarian He 51 carried the code '22-6' (see the lettering style to the left of the drawings of '11-7'). This aircraft was in an identical color scheme to '11-7' except it did not have any underwing lettering. The colored nose and fuselage flash marking was quite popular in Bulgarian AF service at that time (1938-40). Several other types carried this kind of finish, including Arado 65, Heinkel 45, PZL P-24, Avia B-534, Focke Wulf 56 and 58, and even civilian-registered Ju 52/3m.

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## He170A in Magyar Service

Sid Napier © 1998

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The Treaty of Trianon, June 4 1920, forced The newly independent kingdom of Hungary to cede 72% of its territory and 64% of its population to the successor states of the Austro-Hungarian Empire - Czechoslovakia, Romania and Yugoslavia. Nearly one-third of all Hungarians, some of them in compact groups, found themselves living under foreign domination and, in some cases, subject to persecution. In addition, the Hungarian economy had been disrupted, the Allies would not allow the king to mount his throne, and severe limitations had been imposed on Hungary's right to maintain armed forces. As a consequence Hungary's policies during the inter-war period were dictated by the unanimous national demand for a revision of the Trianon Treaty and, because of the disastrous Bela Kun communist regime of 1919, a profound fear of the Soviet Union.

Inevitably, in the late 1930s the Hungarian government initiated a clandestine rearmament program that entailed intensive modernization and expansion of the Magyar Kiralyi Legiero (MKL), the Hungarian Royal Air Force.

The Manfred Weiss concern having acquired a licence to manufacture the Gnome-Rhone 14Kfs Mistral-Major 14-cylinder air cooled radial engine at its facility in Budapest, an attempt was made in 1935 to secure a licence to manufacture the Polish PZL P-24 gull-wing fighter. This was unsuccessful but led to contacts with the Ernst Heinkel Flugzeugwerke with a view to manufacturing in Hungary an He 51 biplane fighter powered by the Gnome-Rhone radial. Heinkel promptly re-engined an He 51 that was demonstrated in Budapest, in secret, late in 1935. However, this aircraft's performance proved unsatisfactory and the MKL opted to acquire the Fiat CR 32 that was to make a name for itself in the Spanish civil war.

Contracts for German and Italian aircraft were placed in the following years. One of the first appears to have been an order for 24 Junker's Ju 86K-2 bombers powered with licence-built Gnome-Rhone radials, that was placed in 1938. It was followed by contracts for another 42, but the first was only delivered in early 1938 because Manfred Weiss had failed to initiate production of the Gnome-Rhone engine on schedule. In the meantime, Hungary acquired 18 Focke-Wulf Fw 56 trainers, three Bf 109Ds and three Heinkel He 112BOs together with the He 112V-9 for evaluation. An interest was also evinced in the Heinkel He 70F, which eventually led to the acquisition of He 170As for the long-range reconnaissance role.

### From DLH to MKL

The He 170A or He 70L, always referred to by the MKL as the He 70, thus became the last production version of the passenger-mail carrier originally designed by Walter and Siegfried Gunter, together with Heinkel's chief engineer Karl Schwarzler to enable Deutsche Luft Hansa (DLH) to compete with two Lockheed Orions Swissair had acquired to open an express service on the Zurich-Munich-Vienna route in May 1932. The first prototype, the He 70a, flew on 1 December 1932, and the second prototype and first pre-series aircraft for DLH, the He 70b, was completed

in February 1933.

"By standards appertaining in the early 'thirties," William Green says, "the Heinkel He 70, with its flowing curves, was supremely beautiful. The oval-section duralumin monocoque of fuselage was sleekly contoured, every rivet being counter-sunk with hardly an excrescence to disrupt the airflow, and the ply-covered two-spar wooden wing possessed an elliptical planform which was to establish a pattern in the years that followed. The main undercarriage members were tucked neatly into wing wells, the BMW VI engine was cleanly cowled and its radiator retracted into the forward fuselage. It was not that the He 70 was so radical, but it took aerodynamic refinement a step further than the revolutionary Lockheed Orion."

Between March 14 and April 28, 1933, the second prototype, the He 70b, re-engined with a BMW VI 7.3 Z driving a VDM adjustable-pitch three-blade airscrew, established international speed records over 100-2000 km with loads of 500kg and 1000kg. The average speed of 357 km/h (223 mph) attained with a 1000-kg load over a 100-km course was greater than the maximum speed of 333km/h (207 mph) of which the RAF's then latest fighter, the Hawker Fury Mk I, was capable.

As the He 70 clearly had military potential the C-Amt (later Technisches Amt) of the Luftfahrtskommissariat had three He 70b's with BMW VI 6.3 Z engines adapted for operation in the high-speed reconnaissance role by three-man crews. The He 70b's were followed by the first version built expressly for the Luftwaffe, the He 70C. This had a bay in the fuselage centre section for six 50kg or 24 10kg bombs and 12 were taken on strength by Luftwaffe units in 1934.

The He 70F-1 was the next version ordered for the Luftwaffe. This was powered by a BMW VI 7.3 Z engine had three vertical bomb racks, and was equipped with a FuG VIII R/T. The sole defensive armament was a single 7.92 mm MG 15 with six 75-round ammunition drums in the rear cockpit. A special feature was an auxiliary 280-liter fuel tank to augment the two 210 liter wing tanks for long-range missions. Fully loaded, the He 70F-1 attained a maximum speed of 335 km/h and was faster than the Luftwaffe's He 51 fighters.

Dual-role He 70F-2s saw service with A/88, the Aufklarungsgruppe (reconnaissance unit) of the Legion Condor in Spain, 12 machines being delivered in October/November 1936 and another 13 from January to March 1937. They were heavily engaged in the Bilbao campaign, but subsequently replaced by Dornier Do 17Fs. Twelve were handed over to the Nationalist air arm in summer 1937 and the remainder in September 1937. They were used to form Gnupo 7-G-14 based at Vitoria.

In Germany, production of the He 70 series was moving into the phase-out stage by the end of 1936 and the last He 70s had been withdrawn from the Aufklarungsgruppen by 1939, being relegated to service with the A/BSchulen and Kurierstaffeln for training and communications duties. They were replaced by Dornier Do 17Fs.

Heinkel had started to solicit export orders, with RLM approval, back in 1935. The first sale abroad was made in spring 1936 to Rolls-Royce in Britain, who acquired an He 70G-1 (ex D-UBOF) re-engined with a 675 hp Kestrel V and registered G-ADZF. This engine development aircraft demonstrated all-

round enhanced performance, including maximum and cruising speeds of 408 km/h and 376 km/h (255 and 236 mph) respectively. It confirmed Heinkel in-house opinion that, unless a more powerful engine was fitted, the He 70 no longer had military potential.

The Hungarian government having already signalled interest, an He 70F demonstrator D-UMAL, was sent to Budapest. On the way the pilot somehow strayed into Romanian airspace and was forced by Romanian fighters to land at Bucharest. The aircraft was released after it was claimed the aircraft had been on its way to Ethiopia and the German ambassador had made representations.

The expected preference being shown for the Gnome-Rhone radial (to be licence-built by Manfred Weiss as the MW-K14B), Heinkel made a test installation in an He 70F-3, D-OHEW. This was then designated the He 170A V-1 and made its first flight on 17 April 1937. A second prototype, the He 170A V-2 (D-OASA) which featured shorter engine bearers, flew in May 1937. Because Manfred Weiss were still unable to supply engines, each prototype was powered by a Gnome-Rhone 14Kirs, rated at 850 hp at 2388 rpm for take-off and 930 hp at 4300 meters, which drove a three-blade variable-pitch Hamilton Standard propeller. Heinkel had to obtain the French-built radials via Italy.

The two prototypes having been tested, contracts were placed for 18 airframes to be powered by MW-K14B radials, which were to be supplied to Heinkel for installation. With the MW-K14B, rated at 910 hp for take-off, the He 170A attained a maximum speed of 430 km/h at sea level and 455 km/h at 2000 meters, climbed to 1000 meters in 2.0 minutes and 2000 meters in 5.2 minutes, had a ceiling of 8100 meters and a range, with auxiliary fuel, of approximately 1200 km.

#### Operational record

Deliveries to the MKL commenced in September 1937 and were completed in February 1938, the He 170As being used to form the 1. Onallo Tavolfelderito Osztyal (1st Independent Long-Range Reconnaissance Group). This was made up of two szaszadok (szasad = squadron), the 1/1 Daru (Crane) and 1/~ Golya (Stork), each with nine aircraft, and was initially based at Matyasfold near Budapest.

Towards the end of 1938 the group was relocated to Kecskemet from where it flew its first operational sorties primarily leaflet dropping missions, when the Hungarian army reoccupied the ethnically Hungarian areas of southern Slovakia and southern Ruthenia. These territories had been ceded to Czechoslovakia in 1920 but returned to Hungary by the first Vienna Award of November 2, 1938.

Further sorties were flown in March 1939 when German troops occupied western Czechoslovakia (which became the Protectorate of Bohemia and Moravia), the Slovaks proclaimed an independent republic and, contrary to Hitler's wishes, the Hungarian army reoccupied Carpatho-Ukraine and established a common frontier with Poland.

Following the outbreak of World War 2 on September 1, 1939, Hungary refused to let German troops cross its territory and declared itself a non-belligerent. But in the months that followed, particularly during the summer of 1940, the He 170A squadrons repeatedly flew clandestine photographic missions over Transylvania, the demand for the return of which to Hungary had for some time led to very tense relations with Romania.

The He 170As operated at altitudes of 6,000 to 8,000 meters and were normally easily able to elude Romanian interceptors. On one occasion, a lone He 170A in the airspace over the Cluj (Kolozsvár) and Brasov (Brasso) area in Transylvania was attacked by Romanian He 112 fighters but managed to return to base. The reconnaissance flights were discontinued after Hitler and Mussolini forced Romania to return ethnically Hungarian Northern Transylvania to Hungary by the second Vienna Award of August 30, 1940.

By early November 1940 the two He 170A squadrons had been relocated to Budaors, near Budapest, but no missions were flown because of the severe sub-zero weather which had a detrimental effect on performance. Reportedly, if a minimum of ice built up on a radio aerial it would start to vibrate and eventually snap off.

On November 20, 1940, Hungary allied itself with the Tripartite Pact powers.

In April 1941, prior to and following commencement of Operation Marita the German "April War" assault on Yugoslavia prompted by the need to assist the Italian forces in difficulties in Greece, the He 170As flew numerous low-level reconnaissance and photographic missions for the Hungarian army when it reoccupied the Backa (Bácska) territory in Serbia and the Prekmurje area in Slovenia that had been ceded to Yugoslavia in 1920. This re-annexation, together with the recovery of territory ceded to Romania and Czechoslovakia, led to the restoration of about three million Hungarians to Hungary.

On June 22, 1941, Hitler launched Operation Barbarossa and on June 27, premier Laszlo Bardossy (1941-42), believing limited co-operation with Germany was the only way to ensure Hungary's independence, also declared war on the Soviet Union. At this early stage in the campaign against the USSR, according to H.J. Mau, Hungary had 269 combat aircraft, only 48 of which were actively engaged in the fighting.

Still based at Budaors, but apparently reorganized as a single unit with a new emblem, the Heltmerfoldes czisza (Seven-League Boots) instead of the Daru and Golya, the He 170As started flying reconnaissance missions on June 26, the day before Hungary declared war. After taking off at Budaors, the He 170As reconnoitered the Sambor, Gorodok, Lvov, Brody, Tarnopol, Chortkov, Dunayevtsy, Kemenets and Podolsk areas, then landed at Ungvar to refuel before returning to Budaors. Only one He 170A ran out of fuel and had to make a forced landing near Fenyvesvolgy. Relocation to airfields closer to the front would have been more convenient, but was unfeasible because the photo evaluation facilities were in Budapest.

In all, about 25 missions were flown. The first He 170A lost was F-407, which was intercepted by Soviet fighters and shot down in flames in the Kemenets-Podolsk sector, all the crew being killed. A few days later F-401 was lost somewhere near Kharkov. Although combat losses were therefore low, the He 170As were withdrawn from first-line service after less than 30 missions had been flown because their range did not enable them to keep up with a front line that was shifting rapidly to the east. Moreover, the aircraft were not popular with their crews, who found the cabin was too cramped for three, the downward field of vision too limited, the single 8-mm Gebauer machine-gun inadequate for defence, and the field of fire poor. The wooden wings also had a propensity to burn when hit.

The He 170As ended their days as target tugs, and some were still flying in March 1944 when Regent Miklos Horthy's and

premier Miklos Kallay's peace overtures to the western Allies prompted Hitler to order the occupation of Hungary by German troops in March 1944.

### Camouflage and markings

Most photos show the He 170As wearing multi-color disruptive upper surface camouflage consisting of large, irregular patches in a pattern that varied from one aircraft to another. The lower surfaces were painted a pale color. According to Georg Punka, the upper surface colors were RLM 72 Grün, RLM 77 Hellgrau and RLM 79 Sandbraun, while the under surface-color was RLM 76 Hellgrau. Other sources, e.g., Air International, show a four-color upper surface scheme comprising black green, dark green, pale grey and sand, with the under surfaces painted pale blue-grey.

A photo of F.404, apparently taken in 1939 or 1940 at Kecskemet, shows this aircraft wearing mottle upper surface camouflage. H.J. Mau opines that the mottle was applied over the original three-color scheme. A photo of the same aircraft, F.404, taken when it was on exhibition at the Budapest Fair in 1942, shows it wearing the original type of camouflage but the later-style national insignia.

The national insignia originally consisted of red, white and green chevrons applied point foremost over the entire chord of the wings, top and bottom, and over the full width of the fin/rudder assembly. According to Georg Punka, the closest color matches are RLM 23 Rot and RLM 25 Hellgrün. The codes were applied in black to the sides of the fuselage about midway between the wing trailing and tailplane leading edges.

The squadron emblem of 1/1, a crane in flight drawn in outline in white (?) on the camouflage color, was positioned on both fuselage sides approximately midway between the wing leading edge and the windshield frame. The emblem of 1/2, a stork in white and black on a red, white and green ribbon in a blue disk with a white edge, was placed between the two cabin windows on each side.

The national insignia and markings were subsequently redesigned - according to H.-J. Mau probably very soon after Hungary declared war on the Soviet Union - to closely resemble the Balkenkreuz and codes worn by Luftwaffe aircraft. They consisted of a white cross quartering a black square worn on the wings and fuselage, while the code was split in two so that the F.4 was on the left of the fuselage cross and the remaining two digits on the right. The tail chevrons were supplanted by horizontal bands of red, white and green applied, with the red on top, over approximately the upper two-thirds of fin and rudder. Similar bands were applied fore and aft to, approximately, the outer two-thirds of the tailplanes and elevators with the green at the tips. At least one He 170A appears to have had a white spinner.

The new emblem applied after the two squadrons had been consolidated to form one, the Heltmerfoldes csizma or "Seven-League Boots," was a drawing of a man carrying a sword and wearing enormous jackboots. It was worn in approximately the same position as the crane of 1/1 squadron.

### The model

The 1/72nd Matchbox kit was used to make up the model. The wingspan of the He 170A is given as 14.8 meters and the overall length as 11.5 meters which, in 1/72nd scale work out at 205.55 mm and 159.72 mm respectively. The completed Matchbox kit

measures 205 mm and 160 mm respectively.

The model was built more or less straight from the box, cockpit detail consisting solely of a floor instrument panel, control column and three seats. The improvements made included a little detail added to the engine (Part No.20) and the undercarriage assembly. The wheel wells were boxed in and new wheel covers were made from thin plastic card to Parts Nos.29 and 34. Cut-outs were made in the covers where, on the real aircraft, two struts joined the oleo leg. The pilot's door had to be scribed and the aperture for the circular window enlarged to allow insertion of the transparency (Part No.65). A problem was encountered with the cabin superstructure (Part No.55), which overlapped and had to be sanded down very thin at the edges to eliminate a step. Thin strips of plastic were glued on to simulate the rails on which the pilot's canopy slid back. Part No.52, which is supposed to represent a machine-gun, was dumped in favour of an Aeroclub MG 15. (A Lewis gun might have been the better choice as the 8.0 mm Gebauer seems to have had a drum on top and a gas-cylinder under the barrel.) The worst problem was the wing-fuselage joint, the parts fitting together with truly remarkable dihedral that took more than enough time and trouble to fix. (Exactly the same problem was encountered when making up another Matchbox kit as an He 70F-2!) The tailwheel was fitted as supplied, although some He 170As dispensed with the fairing.

The color pattern applied was the four-color scheme shown by Air International and the Matchbox instruction sheet. The paints used were Humbrol No.30 Matt Dark Green, No.63 Matt Sand, No.64 Matt Light Grey and No.91 Matt Black Green for the upper surfaces. The under surfaces were painted Humbrol No.65 Matt Aircraft Blue, and the wheel wells, insides of the wheel covers and undercarriage members dark grey. The decals applied were those supplied with the kit.

An alternative to the Matchbox kit is that made by WK Models but not readily available. This seems to feature slightly greater wing chord, which may be right. The kit offers a one-piece lower wing part to get the dihedral right, a one-piece canopy moulded in clear plastic, wheel covers with the proper cut-outs, and parts for an He 70F or He 170A. The mouldings are a bit rough and there is some flash, but the kit as a whole looks like a very viable route to a decent model of an He 70 or He 170A.

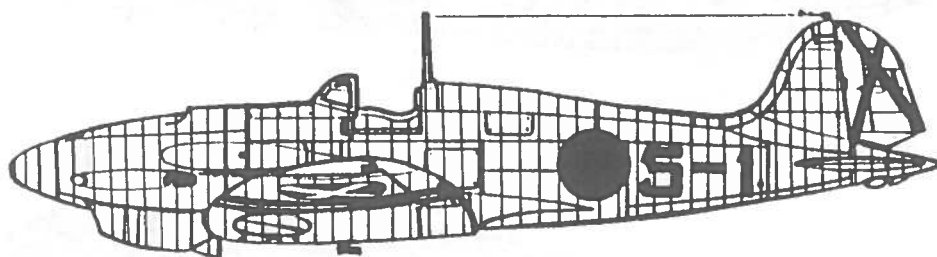
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2. Air International, December 1988, page 318.
3. Air International, January 1991, p.26-33, The Beautiful Blitz.
4. Colliers Encyclopedia, 1991.
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6. Flugzeug, June/July 1989, p.58-61, Georg Punka, Die Heinkel He 70 bei den Ungarn.
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8. Flying Review International, October 1965, p.117-119, William Green, The Most Elegant Heinkel.
9. Green, William, Warplanes of the Third Reich, pages 280-285.

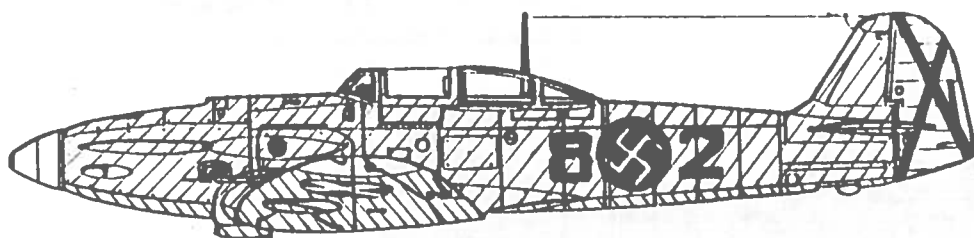
Sid Napier (SAFCH #1521), Burgstrasse 2, CH-4107 Ettingen, Switzerland.



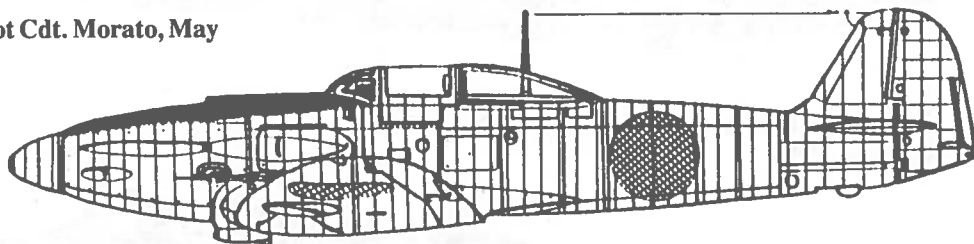
# Small Air Forces Heinkel He 112



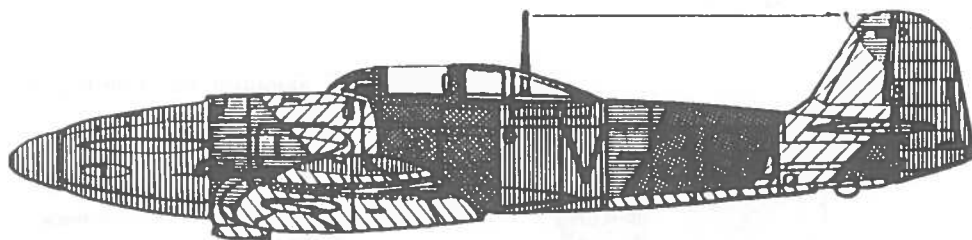
(a) Heinkel He 112 V4 '5-1'. J/88, pilot Lt. Radusch, Spain 1937. Aircraft crashed at Escalona on 19/07/37 while being flown by Schultz.



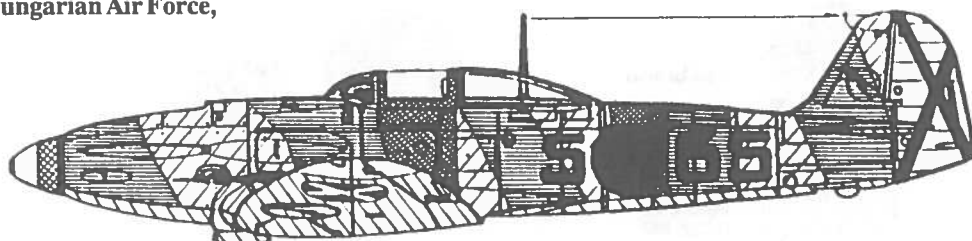
(b) Heinkel He 112 V9 '8 o 2'. Pilot Cdt. Morato, May 1938, Spain.



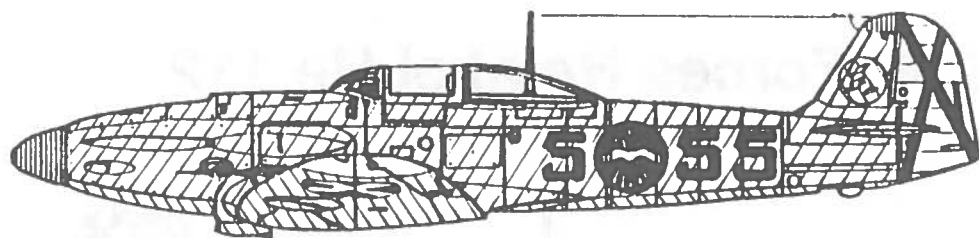
(c) Heinkel He 112 B-0. Japanese Navy Technical School, 1940. (A7He1 Type He Air Defence Fighter).



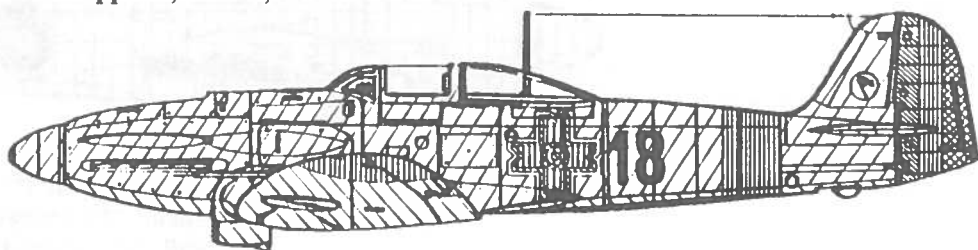
(d) Heinkel He 112 B-0 'V-303'. Hungarian Air Force, 1939.



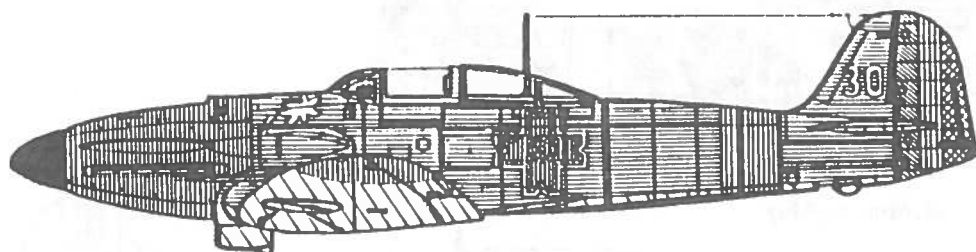
(e) Heinkel He 112 B-0 ~ 5 o 65'. Gruppo 27, Melilla, Morocco, 1940.



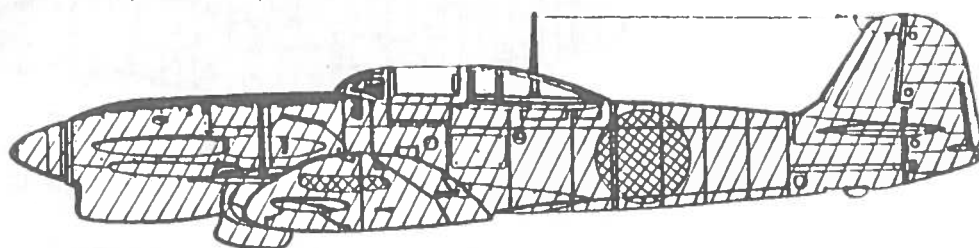
(f) Heinkel He 112 B-0 '5 o 55'. Gruppo 27, Melilla, Morocco, 1939.



(g) Heinkel He 112 B-1 '18'. Romanian Air Force. Crashed in Besserabia, 1941.



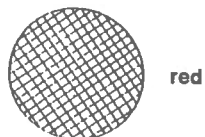
(h) Heinkel He 112 B-1 '30'. Flotila 1, Vinatoare, Romania, 1941.



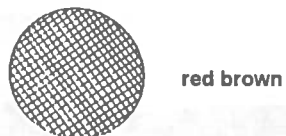
(i) Heinkel He 112 V12. Japanese Test Center, 1940.



yellow



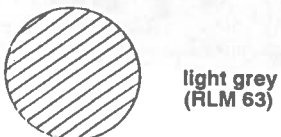
red



red brown



light blue  
(RLM 65)



light grey  
(RLM 63)



dark green  
(RLM 71)



natural metal

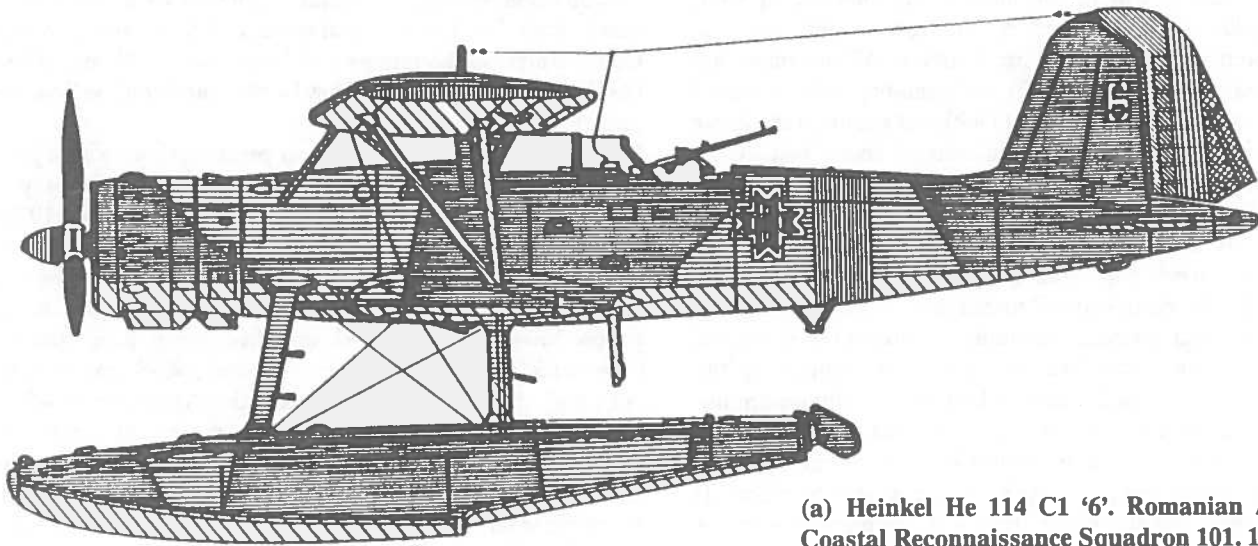


medium blue

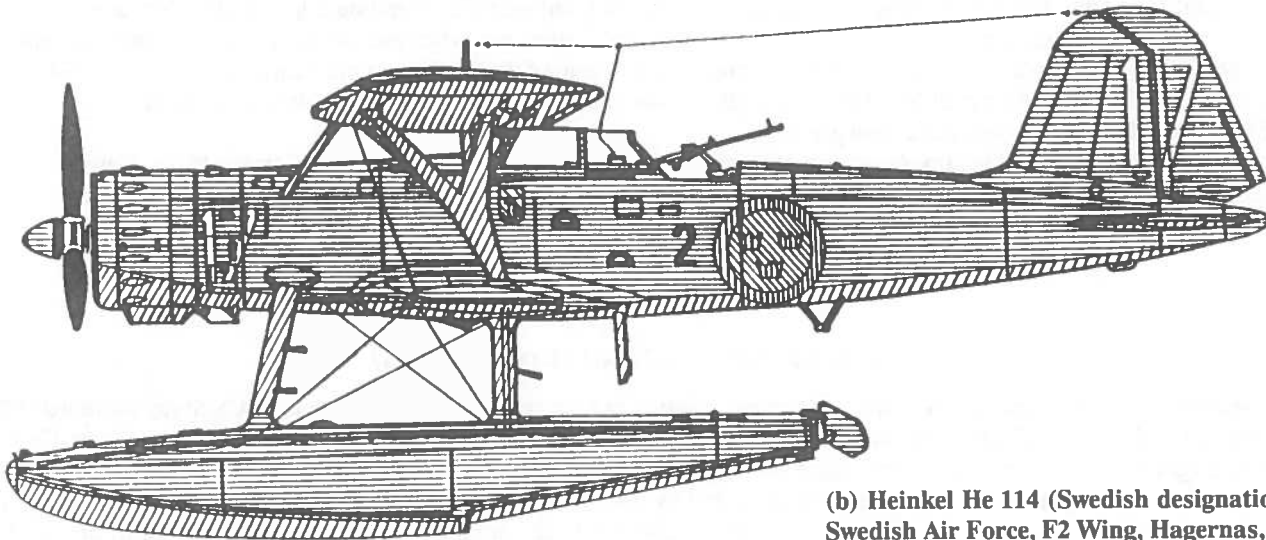
Hubert Cance (SAFCH #809), 56 Bd. E. Lintillac,  
15000 Aurillac, France.



# Small Air Forces He 114



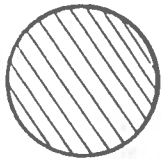
(a) Heinkel He 114 C1 '6'. Romanian Air Force, Coastal Reconnaissance Squadron 101. 1942.



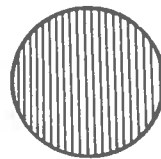
(b) Heinkel He 114 (Swedish designation S12) '17'. Swedish Air Force, F2 Wing, Hagarnas, 1941.



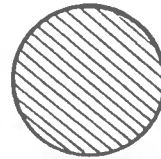
dark green  
(RLM 71)



light blue  
(RLM 65)



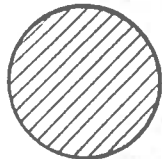
yellow



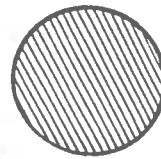
medium blue  
(Swedish)



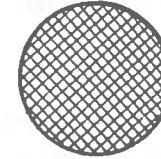
black green  
(RLM 70)



light blue grey  
(Swedish)



purple blue  
(Romanian)



red

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15000 Aurillac, France.



# Czechoslovakian Military Aircraft Colors between the Wars

John Mozolak

[Author's note: Although I had been building airplane models for several years, a trip to the land of my ancestry in 1971, Czechoslovakia (CS), initiated my interest in building, and learning about aircraft of this small nation. Model manufacturer, Kovoavody-Prostejov (KP) had already produced kits of CS's aircraft starting with the L-29 Delfin jet trainer and classic pre-war Avia B-534. As KP manufactured more kits of the airplanes from the classic era, my interest increased in the colors of prewar aircraft.]

Experiments to find suitable aircraft camouflage colors ended in 1921, when from mid 1922 to 1926 the top colors were standardized to be earth brown (zemite hnede), ochre (okrove), green (zelene) and sprayed aluminum (hlinikovy) underneath. In 1926, a new color standard was approved superseding the three upper colors to one, khaki, retaining the aluminium underneath. This color scheme stayed in use until 1939 although some new military aircraft B-35 and B-71 were camouflaged earth brown, ochre and green with light gray undersurfaces. It should be noted that the khaki color was extended few inches under the leading edges of the wings and a lesser distance under the horizontal stabilizer going around the wing and stabilizer tips, tapering to end at the trailing edge.

Over the last two or three decades, various CS publications created some confusion by illustrating profiles of these aircraft in colors having varying shades of brown, olive, and green.

Further, colors were described as zelene, tmave zelene, olivove, hnede zelene, zelen hnede and khaki (respectively, green, dark green, olive, green brown and brown green, and khaki).

We know the official color is khaki and is therefore a drab color. The dictionary states that khaki is dull yellowish brown as is also shade drab. The US National Bureau of Standards publication, Color-Universal Language and Dictionary of Names NBS 440, that khaki can be a light yellow brown, moderate yellow brown, and even a light olive brown.

In 1992, on a visit to CS, a friend presented me with a piece of painted fabric, probably khaki, semigloss to glossy, approximately 3x8 inches (8x20cm) from a Letov S-2, a 1920s era aircraft being restored at the Kbely Military Aviation Museum in Prague. A comparison of the sample to color chips in FSC 595A/B showed no equivalent color. It is of medium to moderate yellow brown in color with an olive green hue, somewhere between 34087 (a dark olive brown) and 34098 (an olive green). Although the khaki is lighter than the American WWII dark olive drab 41, there is a similarity. One can recall how much had been written and disputed in past years about the many shades of Olive Drab 41. This khaki could present a similar situation. Many clear late in the war photos show former CS aircraft now part of the Slovak Air force (1939-45), with what is probably the khaki paint under the leading edges and with bright undersurfaces, leading me to believe that the prewar scheme was retained to the end of the war. Some publications state that in 1941 some aircraft were repainted to light blue underneath.

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## CZECHOSLOVAK COLOR STANDARD CSN 67 3067

In 1973, the Czechoslovak Government (CS) made its second printing of Ceskoslovenska Statni Norma (CS State Standard) CSN 67 3067, Oznacovani A Hodnoceni Barevnych Odstinu Nateru (Designation and Evaluation of Color Shades of Paints) dated March 8, 1972. It has 12 pages and supersedes the specification dated April 7, 1953.

The priloha (enclosure) to the standard, Vzorkovnice Barevnych Odstinu (Samples of Color Shades), is a six page folder consisting of 48 semigloss to gloss color chips (2 x 3/4 inch), 8 to a page. Of interest to the modeller is that some of these colors are used by CS aircraft manufacturers. Attempts made to obtain a more recent color chart were unsuccessful.

No.	Color	FS595 Equiv.	Comments
SEDE (GRAYS)			
1010	Sed pastelova (pastel gray)	36473	Very close. 36473 slightly darker
1018	Sed siva (gray - as in dove gray)	26496	Match
1100	Sed stredni (medium gray)	26132	Match
1110	Sed svetla (light gray)	36231	Match
1310	Sedomodra svetla (light blue gray)		Between 26099 and 26118
1810	Sed tmava (dark gray)	26081	Match
1999	Cerna (black)	37030	Match
HNEDE (BROWNS)			
2092	Hned pastelova (pastel brown)	23448	Match
2179	Hnedoseda (gray brown)	24201	Very close
2210	Okr tmavy (dark ochre)	30215	Match
2320	Hned kavova (Coffee brown)	20117	Very close
2430	Hned cokoladova (chocolate brown)		Slightly darker than 20117
2880	Hned kastanova (chestnut brown)	20059	Very close



**FIALOV (PURPLES)**

3500 Fialova sredni (medium purple)

Deeper than 27142

**MODRE (BLUES)**

205 Modr tyrkysova (turquoise blue)

Close. Slightly lighter than 25299

4265 Modr pastelova (pastel blue)

Closest to 35450. Color is toward 25299 which is darker

4400 Modr svetla (light blue)

Between 25183 and 25102

4550 Modr navestni (signal blue)

25102 Very close. 24550 a shade darker

4700 Modr parizska sredni (medium parisian blue) 25051

Match

**ZELENE (GREENS)**

5014 Zelen pastelova svetla (light pastel green)

Between 34666 and 34550

5080 Zelen hraskova (pea green)

Between 14449 and 14272

5100 Zelen pastelova tmava (dark pastel green) 14260

Match

5149 Zelen svetla (light green)

A shade lighter than 14187

5200 Zelenosedra (gray green) 34108

Very close

5220 Zelen olivova sredni (medium olive green)

Darker and greener than 34227

5300 Zelen sredni (medium green) 14110

Match

5400 Zelen tmava (dark green) 14109

Match

5450 Khaki (khaki) 34088

Match.

lightly darker than 34087

5700 Zelen na vagony (wagon green) 14062

Very close

**ZLUTE (YELLOW)**

6003 Slonova kost (ivory) 37778

Match

6050 Kremova svetla (light cream) 33722

Match

6100 Kremova sredni (medium cream) 13523

Very close

6110 Bezova sredni (medium beige) 13522

Match

6200 Zlut chromove sredni (medium chrome yellow)

Deeper yellow than 13655

6270 Bezova tmava (dark beige) 23448

Close

6400 Zlut chromova tmava (dark chrome yellow) 38907

Match

6600 Zlut dubova (oak yellow)

Slightly lighter than 30266

6700 Okr svetly (light ochre)

Closest to 23275 but darker

An orange brown

**ORANZOVE (ORANGES)**

7550 Oranz navestni (signal orange) 12246

Match

**CERVENE (REDS)**

8027 Ruzova (rose) 11630

Match

8140 Cerven rumelkova svetla (light red) 12199

Match

8190 Cerven rumelkova tmavaa (dark red) 11120

Match

8300 Cerven visnova (cherry red) 11136

Match

8440 Cervenohneda (brown red)

Between 20109 and 22144

8850 Cerven visnova tmava (Dark cherry red)

Darker and more vinaceous than 11136

8900 Cerven maroon (Maroon red)

Closest to 10049 but darker.

**OSTATNI (OTHERS)**

9110 Hlinikova (aluminium) 17178

Match

**COLORS OF VARIOUS VERSIONS OF AERO L-39 ALBATROS**

The following colors with CSN numbers were obtained from Letectvi + Kosmonautika #8, 9, 10 of 1983, monographs on L-39 Albatros and Modela Decals, Catalog No. 4959, 1/72, L-39. Attempts to obtain chips and information on them was unsuccessful. Not known to me if Czech names for the colors are official. No other information is available..

0225 Hnedozelena svetla (light green brown)

1111 Sed kabinova (cabin gray - cockpit gray)

For interested readers, the following list notes the standard colors on different L-39 paint schemes.

L-39 (early version): CSSR: Upper-white/ underneath 1010/ ID markings 8140.  
 L-39C: CSSR: Upper 0225/ 5220. Bottom 1010. Black antiglare.  
 L-39C: Cuba & Vietnam: Upper 0225/ 5450. Bottom 1010.  
 L-39C/L-39ZO: Libya: Upper 5450/ 6270/ 6100. Bottom 1010.  
 L-39C/L-39ZO: Syria: Upper 6270/ 0225/ 5220. Bottom 1010.  
 L-39C/L-39ZO: Iraq: Upper 6270/ 5450. Bottom 1010.

On a visit to the Czech Republic and Slovakia in 1992, I went to places of aviation interest. A trip was made to the military aviation museum at Kbely Airfield outside of Prague. The indoor exhibit had not changed from my previous visit about a decade earlier. However, the roped off outdoor exhibits were new. Many recently demobilized, ex CS Air Force (Soviet built) aircraft were on display, including a Belgian Gloster Meteor and British Phantom (F4).

In eastern Moravia, a stop was made at the Kunovice Aviation Museum, just south of Uherske Hradiste. The outdoor display had about 20 civilian and former military planes and helicopters, lined up in rows behind roped enclosures.

Another museum was found at a former German WWII training airfield at Vyskov, located west of the highway enroute to Prostějov from the south. Located on a grass field, the museum only recently having been established did not have its exhibits displayed in an orderly manner, thus making it look like an airplane junk yard. Since it was summer, the caretaker had much help from willing vacationing school students who helped make my visit there most enjoyable. The exhibits were entirely ex-military CS MiGs, 15 to 21s, Sukhois, several Mil choppers, and an Avia transport. All could be entered, inspected and sat in. In an informal display on the "clubhouse" floor were relics from WWII that included rusted armaments and miscellaneous pieces from dug up wrecks. Artifacts too large for the clubhouse were stored outside under canvas. In decent condition were a Bf 109 engine, a Stormovik stabilizer and main landing gear strut with blown tire from a Wellington bomber. Also on hand were preserved remnants of burnt papers, many still readable, pertaining to the airfield when it was operated by the Germans. In retreating, they destroyed much of what was at Vyskov. When the CS Government turned communist in 1947, a second destruction took place, by burning and burying the leftovers to prevent recovery of any artifacts. And again in the later years, the area was paved into

a parking lot preventing the recovery of any remnants. At the time there was no admission charge but I left a nice donation after a most enjoyable visit. A MiG-21UM caught my attention in that its clear lacquered aluminium skin took on the appearance of a light gray which I measured to be FSC 16440.

I was fortunate to have made an escorted visit to the Slovak Air Force Base at Piestany. On previous trips to CS, I flew from Prague to this west Slovakian town on a Czechoslovak Airlines Yak-40 when the airfield was shared with the military. It was then equipped with L-29 Delfin trainers and many pilot trainees came here from countries influenced by the communist system. Since the independence of Slovakia, the airfield is used only by the military, basing unarmed transport helicopters and transport aircraft.

A friend in the area knew an Air Force officer at Piestany who is a former Su-25 (Frogfoot) pilot and at the time the base maintenance officer. He gave me a guided tour of the base as he was told of my interest in modelling and colors. He pointed out to me which colors were of Soviet origin and which were Slovak (ex CS). He stated the CS built aircraft would be painted using the former CS paints, and the Soviet built aircraft in Russian paints and colors. Everywhere on the field was accessible to me, permitting me to go about with my FSN 595 Fandek of color chips and mac notes. Many of the aircraft have been photographed previously and the pictures published in periodicals where the topical subject was the Slovak Air Force. The listing below is representative of some of the aircraft at Piestany. The nearest equivalents to the light blue noted below are RLM-65, and British Fleet Air Arm Pale Identification Blue. On some aircraft, the freshly painted light blue color had a light green cast toward 35414 that in time may fade.

John Mozolak (SAFCH #1368), 7 Irving Place, Eatontown, NJ 07724, USA.

Type	ID Number	Color Comments (Faded (F)- FS595 Match (*))
In Soviet colors		
An-12	2209	Overall gray 36293*. Black Cyrillic stencilling all over A/C
Mi-8	2832	Earth, lighter than 30118(F) and dark green 35159(F).
Mi-8	1932	Light earth 33448(*), dark green 34097(F), and light blue. General's A/C.
Mi-17	0808	Dark gray 35152(F), light gray(*) and light blue
MiG-21MF	8209	Dark earth 30117(*), dark green(*) and light blue. Freshly painted.
In Slovak (CS) colors		
Mi-8	3932	Medium green 34138, tan 33722; light blue
Mi-8	0837	OD 34088(*), tan 30318(*). Wrap around scheme. VIP A/C. Glossy overall.
L-410	2311	OD 34088(*), tan 30318(*), yellow 13655(*) ID markings.
		Reportedly used by European disarmament teams. Glossy overall.
An-24/26	2506	Dark green 34097(F), tan 33722, light blue 35450. Glossy overall.

# A WWI Chinese Ace in the Armee de l'Air

D. Y. Louie, P.E.

Etienne Tsu was the first and only Chinese ace in WWI. His ace status was not achieved in the Chinese Air Force but in the Armee de l'Air.

Born Zhu Binhau (with a school name Yunchang, and a second given name Yinsheng) on 4 December 1885 in the Shanghai area, Jiangsu Province. Binhau's father, Zhu Ziyao, was the manager of the Eastern Huili Bank. Ziyao later established the Qixing Machine Shop in metropolitan Shanghai and moved the whole family there. While in Shanghai, young Binhau attended the Xuhui Public School. Upon Binhau's graduation in 1898, Ziyao decided to send his son to study abroad. He enrolled Binhau in a technical school near Chalais-Meudon, a name synonymous with France's burgeoning balloon design and modern aeronautics, to study mechanics - the application, both practical and theoretical, of designing, repairing, assembly, and operating of machines. Completing his education in 1903, Binhau returned to China to help his family to run the machine shop business. He later established himself as a leading figure in the field of auto mechanics.

Not totally satisfied with his career growth in China, Binhau returned to France in 1913 to study aeronautics. He first completed civilian flight training at Issy-les-Moulineaux and obtained a flight certificate issued by the Aero-Club de France. Then he enrolled in the French Army School at Villacoublay for advanced flight training. At the time of his graduation from Villacoublay, WWI was in earnest. On 23 September 1915, Binhau volunteered to join the 1st Foreign Legion Regiment of the Armee de l'Air under the name Etienne Tsu. Because Tsu was already a qualified pilot, he was immediately transferred to the 1st Group stationed at Dijon. On 3 December, Tsu was inducted into the Pau School of Aviation where he was enlisted as a reserved pilot. He also received the rank of Corporal.

Based on the combat record of the 1st Group, Etienne Tsu received order to report to Escadrille N37 on 29 February 1916 as a pilot. He was promoted to the rank of Sergeant on 29 April the same year. His debut in air combat occurred on 10 July. Etienne Tsu drew his first blood in this engagement. While flying a Nieuport 17 on CAP, Etienne Tsu scored an enemy Fokker Eindecker and sent it earthward. He repeated his success by damaging a second Fokker Eindecker on 20 August. Also, he was promoted to the rank of Sergeant First Class on that same day. Four days

after his promotion, Tsu was in action again. On this occasion, Tsu single-handedly challenged three Fokker Eindeckers to save a fellow pilot. And simultaneously, Tsu succeeded to force land an enemy plane into the waiting arms of the French Army. For this heroic deed, Tsu received a citation from the French 6th Army on 5 September 1916.

Tsu met his nemesis on 12 September. In this match, his opponent was Ewald von Mellenthin, Commander of Jasta 3 and a seasoned dog fighter. At the end of the duel, Tsu came out alive while his victim plunged to ground near Pozieres, a suburb northwest of Moislains. On the 14th and 15th of September, Tsu temporarily traded his CAP hat for ground strafing missions to rake havoc over enemy trenches. He returned to air combat on 25 September to force another Fokker Eindecker to land on the French-held position near Bertincourt. The next morning, Tsu charged into a swarm of enemy balloons above Amiens. He quickly sent a battle bag bursting into flames, and claimed to have damaged another one over Nurlu. The Armee de l'Air promptly awarded Tsu the rank of Sous-Lieutenant four days later. Sous-Lieutenant Etienne Tsu concluded the year 1916 by claiming a possible kill above Amiens on 3 November.

Sous-Lieutenant Tsu became an ace on 7 January 1917 when at 0905 hours, a Fokker Eindecker fell under the mighty synchronized Vickers MG of his Nieuport 17 over Croix Moligneaux. While on a reconnaissance one February morning, Sous-Lieutenant Tsu was ambushed by six Fokker Eindeckers. He was directly being fired upon for several minutes. Fortunately, he managed to stay out of harms way. However, his Nieuport was riddled with bullets. For unspecified health reasons, Sous-Lieutenant Tsu was relieved from active duty with Escadrille N37 on 30 March 1917. It was speculated that Tsu might have suffered the battle fatigue syndrome resulting from his experience in February. He was later assigned to the St. Cyr aircraft repair unit where he served until the units demobilization on 20 February 1917.

Etienne Tsu returned to China at the cessation of hostilities in 1918. He was immediately invited to participate in the creation of a regional air force for the Jejiang warlord, General Lu Yungxiang. Lu's son, Lu Xiaojia, purchased two Breguet 14s from a French arms dealer, and hired Etienne Tsu as a flight instructor. Unfortunately, after inspecting the two Breguet 14s, Etienne Tsu deemed the planes unfit for flying. In his opinion, even though

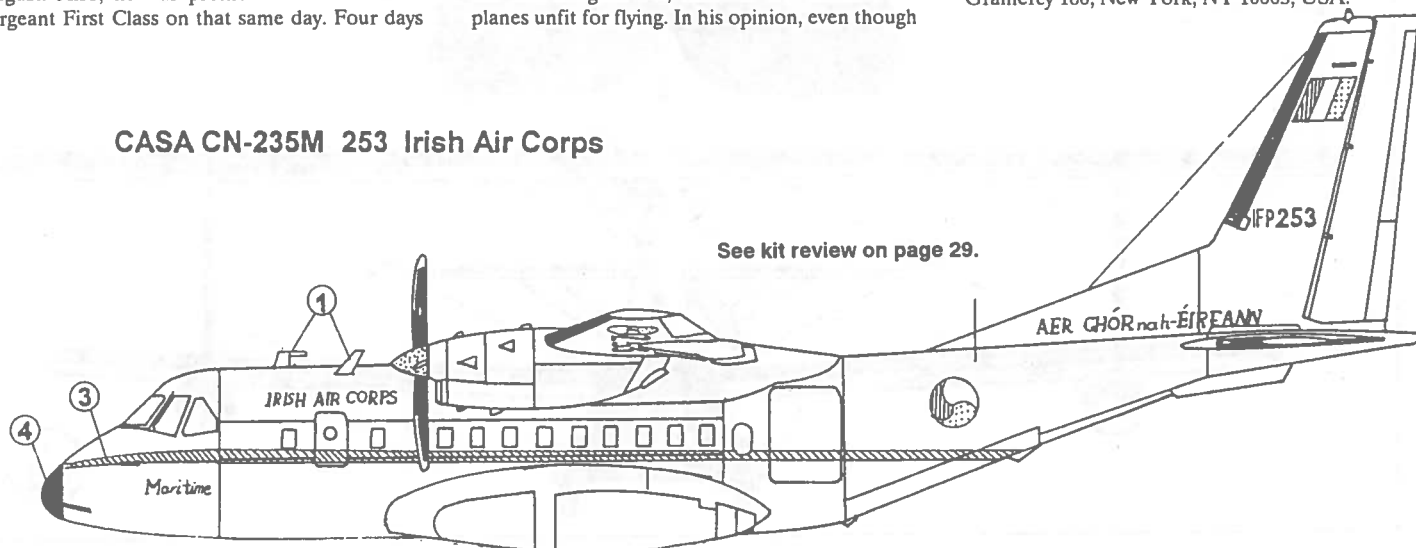
the planes had been masterfully masquerading with a fresh coat of paint, it was obvious that they were refurbished antiquated planes. The Breguet 14s' engine testing confirmed Tsu's suspicion. Both engines ran rough and exhibited high levels of vibration. As such, he did not want to compromise the junior Lu's safety by conducting flight training with these two Breguet 14s. At Tsu's suggestion, Lu Xiaojia exerted pressure on the arms dealer to supply new planes. Eventually four additional Breguet 14s and four Morane-Saulnier parasol monoplanes were acquired. Upon their arrival in mid 1922, General Lu appointed Etienne Tsu to organize the Jejiang Regional Air Force which would be headquartered at the Jienchiao Aerodrome near Hongzhou. The following year the General issued an order to construct an additional aerodrome with three hangers at Lunghwa, a suburb of Shanghai. On 27 February 1924, General Lu formally announced the establishment of the Jejiang Regional Air Force which would be commanded by Colonel Zhu Binhau (Etienne Tsu).

Colonel Zhu re-established contact with French fliers by way of an accident that occurred in May 1924. A French pilot named George Pelletier Doisy and his mechanic Mr. Besin were flying a Breguet 14 to complete a Paris to Tokyo long-distant record flight. Mechanical problems forced them to make an emergency landing at the Shanghai Jockey Raceway. Since the plane was wrecked, it appeared that the Frenchmen might have to abort their flight. In desperation, Doisy beseeched Col. Zhu to loan him another Breguet 14 for continuation of his flight to Japan. With Col. Zhu help, Doisy and Besin were able to accomplish their quest a few days later.

War between warlords broke out in September 1924. General Lu, the Jejiang warlord was attacked by the joint forces of Jiangsu warlord Chi Linyen and Fujien warlord Sun Chuanfong. General Lu fled to Japan and relinquished the control of his regional air force to the victors as war prices. Colonel Zhu was forced to retire from his post and retreated homeward to Shanghai. He never reappeared in the aeronautical circle of China. Therefore, his whereabouts after 1924 was not recorded in the annals of Chinese aviation history.

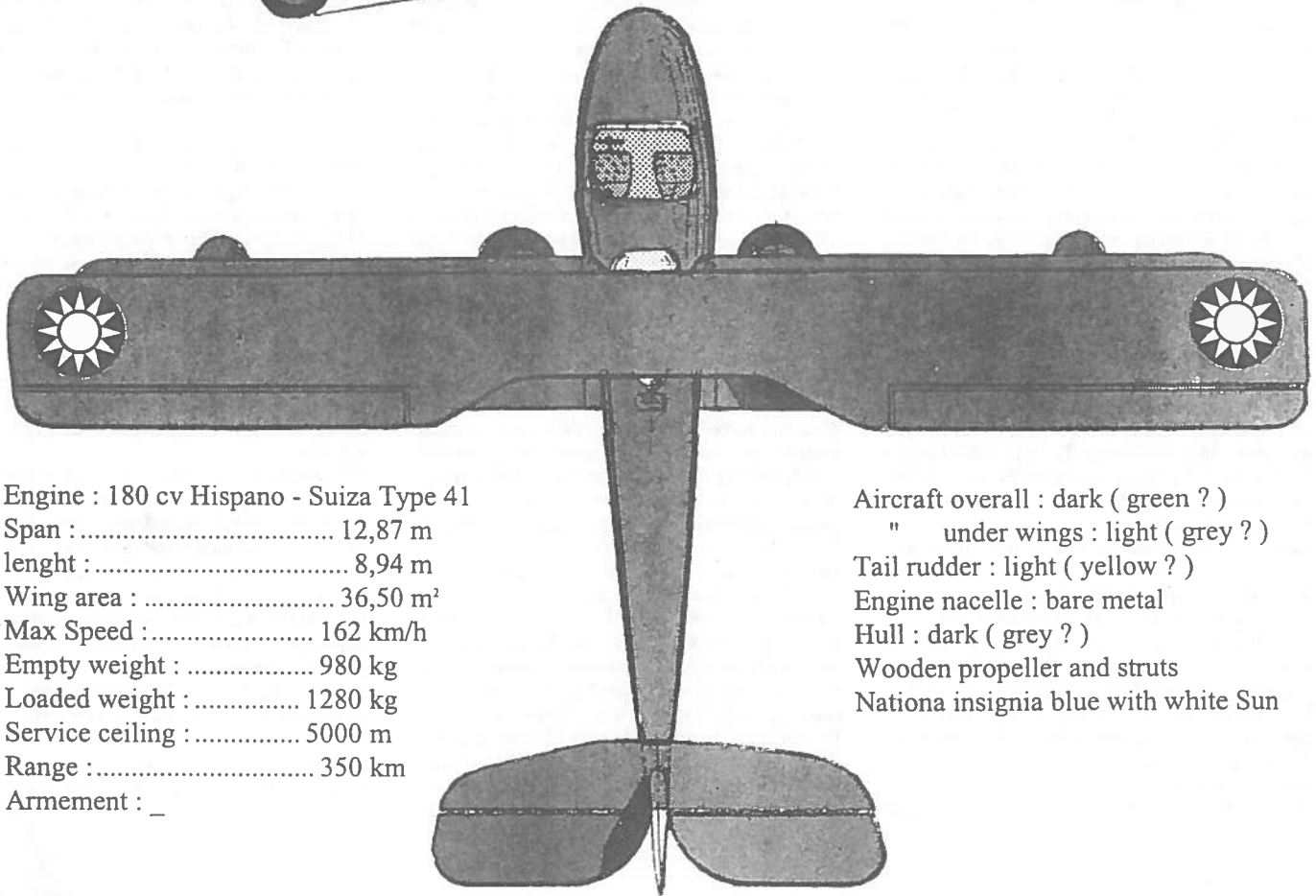
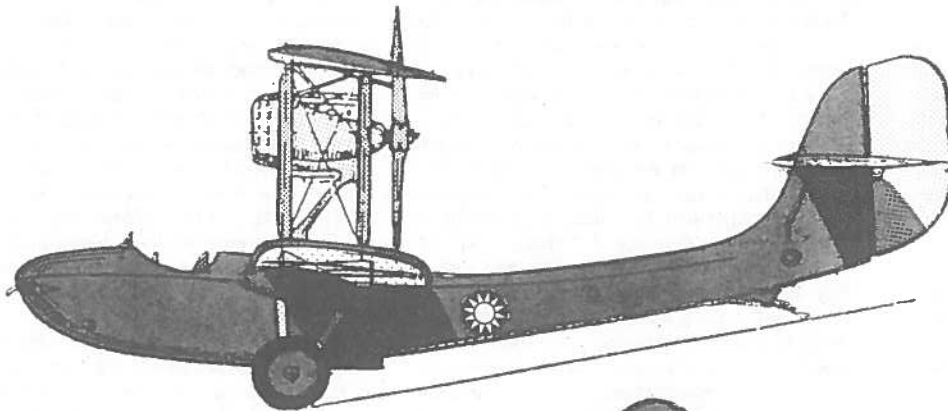
D.Y. Louie, P.E. (SAFCH #544), 1 Irving Place, Gramercy 160, New York, NY 10003, USA.

## CASA CN-235M 253 Irish Air Corps



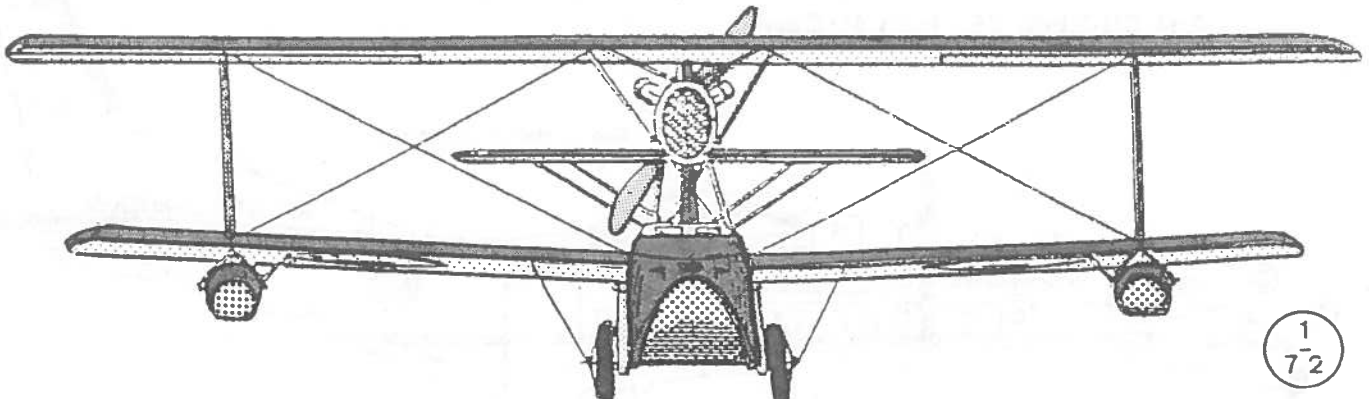
# SCHRECK F.B.A Type 17 H.M.T.2

Chinese Air Force - 1930



Engine : 180 cv Hispano - Suiza Type 41  
 Span : ..... 12,87 m  
 lenght : ..... 8,94 m  
 Wing area : ..... 36,50 m<sup>2</sup>  
 Max Speed : ..... 162 km/h  
 Empty weight : ..... 980 kg  
 Loaded weight : ..... 1280 kg  
 Service ceiling : ..... 5000 m  
 Range : ..... 350 km  
 Armement : \_

Aircraft overall : dark ( green ? )  
 " under wings : light ( grey ? )  
 Tail rudder : light ( yellow ? )  
 Engine nacelle : bare metal  
 Hull : dark ( grey ? )  
 Wooden propeller and struts  
 Nationa insignia blue with white Sun



1  
72



# A French Flying Boat in Chinese Service

Christian Hotte

The FBA (Franco British Aviation) Company was well-known during the first World War for the production of a long series of flying boats used by American, Belgian, French, Italian, and Russian maritime services. After the war this company carried on production with improved versions of wartime models, especially the FBA type 17, with some success on exportation market. The Polish Navy bought 16 flying boats (some were still in service during the September campaign (see SAFO #56, October 1990 p.116). It appears that China also bought the FBA type 17 in the

twenties. But the exact quantity is unknown. It's sure that a French mission was sent in China in 1924 to promote this aircraft. The consequences of this mission is unknown. The drawing was realized from a photo published in the book "Sous l'aile du Calao" depicting a Chinese FBA crashed in January 1930 at Fort Bayard (now Guangzhouwan, near Canton in southern China).

Christian Hotte (SAFCH #902), 6 impasse Santos Dumont, F-44470 Carquefou, France.

## -books-books-books-books-books-books-books-books-books-books-books-books-books-books-books-books-

**La Campagne de Pologne, Septembre 1939:** L'Allemagne Declenche la Guerre Eclair, by Jose Fernandez. Batailles Aeriennes, #4 1998. Lela Presse, 39 rue A. Briand, 62200 Boulogne/Mer, France. 210F for 4 issues.

After covering the Battle of Britain and the Battle of France, the Batailles Aeriennes series moves back in time to the beginning of World War Two with a volume devoted to the September Campaign. This issue continues the format of its predecessors; 82 pages in A-4 format printed on high-quality glossy paper sturdily-bound between durable card covers, with 120+ photos, 20 to 30 color drawings, maps, tables, and 3-view drawings. The chapters are: "Hitler veut la guerre", "La puissance allemande", "Les forces polonaises", "Blitzkrieg: le choc", "Combattre jusqu'au bout", "La participation slovaque", "L'exile", "L'URSS", and "La fin". Maps show the distribution of air and ground forces on 1 September, and at four times during the campaign. One-page "Monographiques" with color and 3-view drawings cover: PZL P.11, Lublin R-XIII, Heinkel He 46, PZL P.23, RWD 14 Czapla, Heinkel He 111E, and PZL P.23 Karas. Additional color side-view drawings include: P.7a (1), P.11a (2), P.23 (6), P.11c (6), P.37 (4), Me 110 (2), Bf 109 (1), Do 17 (1), Hs 123 (1), Ju 87 (1), and Slovak Avia B.534 (1).

The photographs are all of units operating in Poland during the September Campaign and are about equally divided between Polish and German subjects. In addition to photos of aircraft, there are a number of photos of ground subjects than effectively support the presentation. While most of the photos of Polish aircraft will be well known to serious students of the September Campaign, it is nice to have them so well reproduced and available in one place. The WWII enthusiast with only a peripheral interest in the September Campaign will find this an inexpensive way to add a marvellous collection of photos and color drawings to his/her library.

One small beef is that this volume does not contain any chapters about the lesser known aspect of the battle which were such a joy in the earlier volumes, e.g. barrage balloons over England and French anti-aircraft units. However, the chapter of the Slovak participation and the Soviet "Stab in the Back" are most welcome.

A major complaint is the misuse of the final four pages on a review of the Monogram 1/48-scale SB2C Helldiver and Japanese Army Air Force uniforms. These pages could have been much more usefully employed to supplement the main topic, such as a review of kit of the P.11c or P.37 and drawings of Polish Air Force uniforms.

La Campagne de Pologne will be a welcome addition

to the library of any one interested in WWII. It is particularly recommended to every one interested in Polish aviation whether they already have an extensive collection or are just beginning a collection.

Review copy provided by Michel Ledet of Avions.

**Les Chasseurs Grumman de l'Armee de l'Air, Hellcat et Bearcat en Indochine,** by Bernard Chenel. Hors serie - AVIONS - No. 6. Lela Presse, 39 rue Aristide Briand, 62200 Boulogne-sur-Mer, France. 125F + 20F postage.

This is another very welcome "Special" from Avions. While the small-air-force modeler is well acquainted with decals for Bearcats operated by Vietnam and Thailand in Southeast Asia, the use of these aircraft and the Hellcats, by the French in Indochina, is relatively unknown. This soft-bound book presents this story in 100 A-4 size pages, with French text, 140 photos (a few in color), page after page of tables, and 12 color side-view drawings. The chapter titles give a good idea of the contents and completeness of this book: (1) "La chasse renaît sur Hellcat; Periode de novembre 1950 au janvier 1953". (2) "Les Bearcat entire en action: Periode du 6 fevrier 1951 au 30 juin 1952". (3) "D'autres Bearcat en renfort: Periode du 1 juillet 1952 31 octobre 1953". (4) "Toute la chasse sur Bearcat: Periode 1 novembre 1953 au 31 juillet 1954". (5) "Apres le cessez-le-feu: Periode du 1 aout 1954 au 31 aout 1955". (6) "Entrainement et formation: Periode du 1 septembre 1955 au 7 juillet 1956". Appendices include a one-page table on the "Traditions et Marques sur Hellcat et Bearcat en Indochine", a 4-page table listing the history of individual Hellcats, a 23-page table listing the history of each French Bearcat, 10 color side-view drawings of French Bearcats, and two color side-view drawings of French Hellcats.

The photo reproduction is excellent as are the color side-view drawings. The self-explanatory tables give for each aircraft the BuAer number, serial, deliver and departure date for each unit the aircraft served, code, and ultimate fate. For example, BuAer 94830 was delivered to CG 1/22 on 27/10/1953 where it carried code letter 'D', and on 28/1/54 it a "detruit a Dien Bien Phu, collision au roulage avec 121474; sgt Perfetti blesse grave".

The French text is a decided disadvantage for the enthusiasts not familiar with the French language, but a French-English dictionary should allow even the most language impaired to workout the more important parts of this interesting story. This book is highly recommended to all students of the wars of Southeast Asia. It would also make an invaluable addition to the library of any modeler intending to put together a representative collection of models

of aircraft that participated those wars.

Review copy provided by Michel Ledet of Avions.

**Spitfire: Star of Israel** by Alex Yofe. Ventura Publications. Ventura Hobby Products, PO Box 10-213, Wellington, New Zealand.

Any one familiar with the fine kits, decals, and other modeling products coming out of New Zealand under such labels such as Tasman, Ventura, and Falcon should not be surprised by this latest product of the fertile minds of Messrs Laird and Barker. The book has its conception in a plastic kit (and in the spirit of international cooperation). In 1988 Ventura Hobbies come out with a kit of the Avia S-199 and shortly thereafter, Malcolm Laird received a letter from Alex Yofe in Israel pointing out mistakes on the decal sheet that accompanied the kit. The resulting exchange of correspondence grew into cooperation that inevitably lead Ventura into the publication field.

The result is a book that puts most long-time publisher of aviation books to shame. This 54-page book, printed in A-4 size on high-quality glossy paper with a sturdy card cover is a model that all publishers should study carefully. Firstly, the author and publisher wisely decided to limit the subject to Israeli Spitfires during the War for Independence, resisting the temptation to cover all the Israeli fighters of this war, the Egyptian Spitfires, or even the Israeli use of the Spitfire after the war. By thus limiting their coverage, they are able to present a detailed, but easy to follow story, that keeps the readers attention without overloading the reader's memory storage.

The text starts with the recovery and reconstruction of two Spitfire from wreckage found at ex-RAF bases. Next it describes the purchase of Spitfires from Czechoslovakia and the difficulties encountered in flying these aircraft to Israel. The operational use of the Spitfires in helping drive the Egyptians out of the Negev is described with every air combat and ground attack mission meticulously detailed. Finally, the unfortunate clash between Israeli and RAF Spitfires and tempests on 7 January 1949, the closing day of the war, is described in detail.

Several appendices cover the Egyptian Spitfires shot down over Israel and salvaged, Egyptian Spitfire 664 captured in a raid on an Egyptian air field led by Yitzhak Rabin, a controversial salvaged Egyptian Spitfire, a pictorial essay of Israeli Spitfires immediately after the war, and a section of camouflage and marking 1948/49.

The pictorial coverage (85 photos) is outstanding in selection and reproduction. There are two pages of excellent scale drawings including side, top, and bottom views of "a typical" Mk IXc, and side-view

drawings of one of the two original Israeli Spitfires and an ex-Czech Mk IXe with Luftwaffe style 300-liter wing tanks for the ferry flight from Czechoslovakia.

However, for the modeler, the most outstanding part of the book is the selection and quality of the b&w and color side- and 3-view drawings. Black and white drawings are side views of RAF 'RG-W' thought to be the source of 'D-130' the first Israeli Spitfire, 'D-130' in original dark green primer color scheme, and Israeli Spitfire 2018 white '17. Also in b&w is a 3-view drawing of the Egyptian Spitfire IX '664' captured by the Israeli Army. Color side-view drawings are TE524 'JT-5' in Czech insignia, SL632 in Yugoslav markings for the ferry flight, 'D-130' immediately following it rebuild from RAF wrecks, and the first 2 Spitfires in later color schemes as 2002 white '11' and 2001 as black '10'; a 3-view drawing of 2011 white '26', side views of 2012 white '16', 2015 white '23', an Egyptian Mk XI shot down by Israeli ground fire, an Egyptian Macchi MC.205V, and an RAF Spitfire Mk 18 TZ203 'J'. The back cover has color side views of D-130 (opposite side from the drawings inside, Egyptian '664' (now in color), RAF Spitfire 'RG-W' (now in color), and Israeli Spitfire white '31'. The cover painting shows Spitfire white 12' and Mustang black '40' shooting down an Egyptian Macchi.

This book is a sheer joy and an absolute must for every small-air-forces enthusiast's library. Other books promised from Ventura include: Spitfire: Star of Israel Pt.2, Spitfire Blue Birds Pt.1' Avia S-199, and Spitfire The Anzacs Pt.1.

Review copy provided by Malcomb Laird of Ventura Publications.

**Junkers Ju88**, Model Graphix Aero Detail 20. Available from: RZM Imports, PO Box 995, Southbury, CT 06488, USA. 96 pages, 26 cm by 26 cm. Soft cover.

This book, number 20 in the Aero Detail series produced by Model Graphix of Japan, has a minimum text but many photos, color drawings, and scale drawings. All text and captions are in Japanese and English. The main portion of the book consists of photos of the only three Ju 88s known to currently exist: (1) Ju 88D-1/Trop on display at the USAF Museum. Wright-Patterson AFB, (2) Ju 88R-1 on display in the Battle of Britain Hall at the RAF Museum, and (3) Ju 88C-2 being restored by the Norwegian AF Museum. The USAF Museum aircraft was flown to Cyprus in 1943 by a defecting Romanian pilot. The British gave it to the USAAF who tested it before sending it to Arizona for storage in 1946. It was restored by the USAF Museum in 1960 and is now painted in its original Romanian markings. The RAF Museum's aircraft was force landed in Scotland in 1943 and has been on display at Hendon since 1979. The third Ju 88 crashed on a lonely mountain in Norway in 1940. It was recovered in 1997 and is currently undergoing restoration at the Norwegian AF Museum.

The photo coverage of these aircraft begins at the nose and works back to the tail. This 50-page section has 374 color photos. The remaining 50 pages of the book consists of 12 color side-view drawings of Luftwaffe Ju 88, 11 pages of b&w photos of operational Ju 88, and 10 pages of drawings of details (from Ju 88 manuals), and 14 pages of scale drawings of Ju 88 variants.

As can be expected from a Japanese publisher, the quality of the color photos is outstanding, the color drawings are exciting, and the scale drawings superb. This publication is a must for anyone intending to make a detailed model of the Ju 88. The

small-air-force modeler wishing to do a model of a Romanian Ju 88, but is unable to visit Wright-Patterson, AFB will also find this book invaluable.

Review copy provided by Alfred Weinzierl of Model Graphix.

**Mirage IIIEA/DA**, Cettolo, Mosquera & Nunez Oadin. Fuerza Aerea Argentina N°. 4. Available from SAFCH or Jorge F. Nunez Padin, Ave. Piedrabuena 2915, 9001 Rada Tilly, Argentina.

This latest in the series on aircraft of the Fuerza Aerea Argentina continues the excellent standard set by the editor, SAFCH member Jorge Nunez Padin. The 32 pages are printed on high-quality glossy paper permitting outstanding reproduction of the 23 b&w photos, and the heavy covers and center pages allow Kodak-quality reproduction of the 18 color photos. An excellent 3-view drawing (port, starboard, & top views) illustrates the pattern of the early 3-tone camouflage of Verde Oscuro (FS34079), Verde Medio (FS34102), and Marron Medio (FS30219) upper surfaces with Blanco (FS36622) under surfaces. Of particular interest are the color photos of the current overall Gris Claro (approx. FS36495) color scheme. This scheme is devoid of all national markings except for a blue-grey Argentine flag on the vertical fin. The only other markings, other than the usual ejection triangle and a minimum of stenciling, is the blue-grey eagle's head emblem of the Grupo 6 de Caza on the vertical fin and "la silueta de las Islas Malvinas" on the port side below the cockpit canopy. The text, in Spanish, consists of the usual chapters: "Historia" 5 pages; "Operaciones en Malvinas" 4 pages; "Tecnica" 2 pages; "Identificacion" 2 pages with the history of all 21 Argentine Mirage IIIs; and "Colores & Insignias" one page.

Highly recommended. not just for in the photographs, but for anyone who can wade through text such as: "I-015 Mirage IIIEA (msn 13F/3HD): Arribo al pais en 10.79. Rearmado por el Aera Material Rio Cuarto y entregado al Grupo 8 el 19.03.80. Derribado el 01.05.82 en proximidades de Puerto Argentino por el Sea Harrier XZ423 del Fl.Lt. (RN) P. Barton. Piloto 1o Ten C. Perona eyectado."

Review copy provided by Jorge Nunez.

**Lockheed Hercules Production List 1954-1999**, 16th edition. by Lars Olausson. Available from Lars Olausson, Box 142, S-530 32 Satenas, Sweden for \$14 (or equivalent) cash surface mail. Add \$1.00 for airmail. "No cheques, please. The bank charge is \$12."

Lars Olausson's "Lockheed Hercules Production List" is now in its 16th edition. The earlier editions have been reviewed in SAFO, but for new readers who may be unfamiliar with Lars' Labor of Love, and for other who may still think a "production list" is dull, let me briefly summarize the contents. The first 123 pages of the 160-page book is a plane-by-plane list by c/n of every Herc produced with model, initial user, and subsequent history. This is followed by a listing of model with c/n, a list of commercial operators with c/ns, a list of civil registration with c/ns, a list of government and military operators with c/ns, and a list of USAF/USN/USMC/USCG serial numbers with c/ns. These lists allow identification of the c/n of any Hercules observed, either in the flesh or in photographs. Then, by consulting the c/n listing, the entire history of the aircraft can be determined.

In the reviews of previous editions, the value of these lists was illustrated by following the history of the six Hercules purchased by Kuwait. There's not been much action since the 15th edition, so here's

a summary of the KAF Hercules: (1) c/n 4350 '317' was delivered 7012 and was destroyed in France by a lightning strike 800905. (2) c/n 4412 '318' was delivered 7104 and sold 8205. (3) c/n 4949 'KAF322' delivered 8006; it was damaged at Kuwait City by ground fire 900502 and flown to Iraq where it was hit by a bomb; it has been returned to Kuwait but will not be repaired. (4) c/n 4951 'KAF323' was delivered 8302 and was evacuated to Saudi Arabia 900802; it is now in Lisbon undergoing repair. (5) c/n 4953 'KAF324' was delivered 8304 and was evacuated to Saudi Arabia 900802; last reported as 'UN6198' on 9704. (6) c/n 4955 'KAF325' was delivered 8304 and was evacuated to Saudi Arabia 900802.

This is an indispensable reference for anyone interested in the Herky Bird. If anyone submits a drawing of a small air force Hercules, your editor can use this book to provide the history of the aircraft. Review copy provided by Lars Olausson.

[Editor's note: Lars writes that he needs information about ex-US military C-130A and B that went to countries in Africa and South America. Anyone with even the smallest piece of information on these aircraft should contact Lars at the address above.]

**Wings Over Spain**, History and Images of the Civil War 1936-39, by Angelo Emiliani & Giuseppe F. Ghergo, (Giorgio Apostolo Editore srl, Milano, July 1997; 200pp, 369 photos (346 b&w, 23 color); 6 Loyalist and 6 Nationalist color aircraft planviews; documents, tables, maps; biblio., index; price unknown).

This volume is the third in a series, but the first in English, of an album of photos, mostly concerning aviation subjects, of the Spanish Civil War co-authored by two noted Italian aerial historians. The first edition of this work, 'Nei Cieli di Spagna, 1936-39, Immagini e Documenti delle Forze Aeree in Guerra', was released by the same publisher in September 1986. It had 174 pp, 230 photos (all b&w), 8 color aircraft planviews (6 Nationalist and 2 Loyalist), documents, tables, maps, biblio, index, etc, and sold for 42,000 Lire (about \$28.00). It was not intended as a complete history of the airwar, but did have long photo captions which provided a good deal of information for those who already had some knowledge of the conflict from standard sources. Many of the illustrations had never before been published; others had only appeared in fairly obscure works.

In February 1997, an expanded version of 'Nei Cieli...' was published as 'Ali in Spagna, Immagini e storia della guerra civile 1936-39'. This had about 15% more pages, 60% more photos (including 23 color shots of insignia and I.D. papers), 50% more color aircraft planviews (all Loyalist), and some new lists, e.g. Aviazione del Tercio/Aviazione Legionaria "aces" in Spain, and Italian aviators killed in Spain; recipients of top German, Italian, Spanish Nationalist and Republican (but not Soviet) military decorations, etc.

Five months later, the translation of 'Ali in Spagna...' was released as 'Wings Over Spain...' virtually unchanged, except that minor errors on about a score of pages in the Italian edition were corrected in the English edition.

Readers interested in 1930's aviation will find 'Wings Over Spain...' to be of interest because of its inclusion of little-known subjects. For the same reason, students of the Spanish Civil War will find its unique illustrations a necessary addition to their libraries. Highly recommended!

Tom Sarbaugh (SAFCH #497), #450 Boynton Avenue Berkeley, CA 947071702, USA.

**YASIG** Vol.1 No. 1 January 1998. Yugoslav Aviation Special Interest Group Newsletter. Nenad Miklusev, Bulevar Veljka Vlahovica 56/10, YU-23000 Zrenjanin, Yugoslavia. \$20 USA, £12 UK, 30 DEM Germany for 4 issues. "Payment should be made in cash due to the high redemption costs." The premier issue of the Yugoslav Aviation Special Interest Group (YASIG) Newsletter is a real small-air-force gem. Its 20, A-4 size, pages are full of text, photos, and drawings of aircraft that are relatively unknown in the "west". Articles in Vol. 1, No. 1 are: "Polikarpov Po-2" 4 pages including 4 photos and 11 side-view drawings (with associated top and bottom plan views) which include aircraft in military markings and civil-registered aeroclub machines. Of special interest to the conversion addict is the Po-2W with the original Russian radial engine replaced by an inline Walter Minor. "Rogazarski PVT" one page including a 1/72-scale 3-view drawing with cross sections. "Fockwulf Fw-190 F8" 3 pages including 2 photos and a 4-view drawing of a captured Fw-190 in YAF markings. "Yugoslav Spitfires" 4 pages including 7 side-view drawings (with top views) of Spitfire Mk-Vc and IX carrying YAF markings. "Soko J-20 Kraguj" 2 pages including one photo, 1/72-scale 4-view drawing with cross sections, and a 3-view drawing of a camouflaged Kraguj with the current YAF insignia. "Sky servant" 2 pages including 2 photos and a 3-view drawing of a Do-28-D2 carrying the current YAF insignia. "Soko J-1 Jastreb-Acro" one page including a 3-view drawing of a Jastreb in the markings of the Flying Stars (Letece Zvezde) aerobatic team. "Folland Gnat F-Mk-I" one page including one photo and a 3-view drawing of a camouflaged YAF Gnat.

SAFO member Nenad Miklusev has designed YASIG specific for the small-air-force enthusiast and modeler. Each article contains a short, but informative history, followed by drawings showing the camouflage and markings (with complete color information) for representative aircraft. The YASIG is highly recommended for all SAFO readers, especially those with interest in modeling the aircraft of the Balkans.

[Editor's note: If you're still not convinced that you cannot live without YASIG, send \$5 to SAFO for a Xerox copy of the first issue (reduced to 8.5 by 11 size). All profits will go to Nenad.]

Articles promised for the future are: April 1998; Fizir, Sent (sic) George, Hurricane Mk-IIC, Junkers Ju-87, Jak-1M, MiG-21F, Utva 75-V 53, and Akro Zlin 526. July 1998; Fizir FN-R, Me-109E, Me-100C, Jak-3, Aero 2, MiG-21PFM, SL-30 Liska, Akro F-86E. October 1998; Me 108G, Jak-9, MS-406, Aero-3, MiG-21MF, PZL-104 Wilga, L-13 Blanik, Akro Super Galeb. Also promised is a YASIG Special on IK-Fighters; IK-1, IK-2, IK-3, IK-4/5, S-49A/C (US \$10). Also available are VHS Videos: "Yugoslav Aviation History" 120 minutes b&w; From 1909 to MiG-29. "Belgrade 1997 Open Day" 90 minutes color; Su-30, Mirage 2000, AMX. etc. "Yugoslav Aerobatic Teams" 75 minutes color/b&w; From 1930 - Furies, Jaks, Zlins, Sabres, Galebs, Jastrebs, and Super Galebs. US \$25 each.]

1909-1939 Air Racers, International Aeroplans #8, Plans, 3-Views & Data. AeroPlans, 8931 Kit-tihawk Ave., Los Angeles, CA 90045, USA. \$10.95 plus \$2.00 handling. Foreign \$15.00 surface or \$17 airmail.

Almost the entire 32 pages of this latest issue of A.C. Anson's series of plan-books are devoted to air racers: "Folland SE-4 a one-page 3-view draw-

ing. "1909 Curtiss Reims Racer" 3 pages of detailed drawings. "Loening M-8" 2 pages of drawings for a flying model. "1921 Villiers-Santos VS-2 French Air Racer" 2 pages of drawings for a flying model. "1922 Savoia Marchetti S-51 Seaplane Racer" a 2-page 3-view drawing. "1936 Chinese Air Force I-15bis" 4 pages of drawings for a flying model. "Focke Wulf FW-56" 2 pages of drawings for a flying model. "1930s Westland Widgeon III" 2 pages of drawings for a flying model. "Bloch 120: Ville de Paris" 2 pages of drawings for a flying model. "1914 DFW Mars Pfell Biplane" a 2-page 3-view drawing. "1930 Start 'New Look' Sport Plane" one page of drawings for a flying model. "1934 Payen 350 Cd Coupe Deutch Racer" a 2-page 6-view drawing. Each drawing is accompanied by a short history and color and marking information. There is also a 4-page collection of 14 photos of models from the reader.

The review copy was provided by the A.C. Anson of AeroPlans.

"Here are the summaries for the most recent issues of **Aeroplano: Revista de Historia Aeronautica**. #13 1995: Fifty years of the Academia General del Aire / Juan de La Cierva Codorniu, Biographical notes / Interview with Carlos Texidor (veteran of the SCW and WW2 on the Eastern Front, with the Luftwaffe) / The first airmen in Spain, 1909-1910 (many famous names, Santos Dumont, Blériot, Hélène Dutrieux, and others less famous as García Cames, Poillot, Godart, Olieslagers, Le Blon, Brunet, Fernández, Vverdager, Loygorri, / Military Aviation in Spanish West Africa 1924-1936 / Spanish Republican aces: Leopoldo Morquillas and a grave in the Caucasus / The German aces: visit to the last of the heroes, Adolf Galland / Ala de No. 1, pioneer of the modernization of the Ejército del Aire with the F-86F / History of the single-engine light aircraft of the Ejército del Aire (all the aircraft coded 30) / History of the Spanish prototypes. The autogiro / The beginnings of aviation in Valladolid, 1904-1911 / José Piñero, first aerobatic pilot in Spain (1913).

#14 1996: Notes on the 13 Regimiento and the Junkers Ju 88s / The rotary wing aircraft built by AISA / Ifni, 1957: eighteen crucial days (on the last Spanish colonial war) / Hidalgo de Cisneros, an unorthodox character / Figures of Spanish aviation: José María Bravo (Republican fighter ace of the SCW) / Airfields, airports and air bases, 1911-1995 / Ala de Caza No. 2 (The F-86F at Saragossa AB) / Homage and remembrance (on the Spanish tradition of perpetuating deceased airmen by writing their names on aircraft. / Those graduations / The Elizalde company and their successors, ENMASA (history of two of the most remarkable Spanish aviation engine makers) / The monument of the Ejército del Aire at the Plaza de Moncloa.

#15 1997: The Spanish Nesser, the C-4K (alias Buchón) / The Junkers Ju 52/3m in Spain / German aircraft crashed on the Lérica Pyrenees in WW2 / The Ejército del Aire and music / Autogiro La Cierva C.30A registered LV-FBL (history of an Argentine registered autogiro) / Antonio Fernández, first Spanish airmen killed in accident / Third Course, pilots awaiting their fiftieth anniversary (commemoration of a course for reserve pilots) / Notes on the Spanish Settantanove (on the Spanish SIAI SM-79 / The Fighter Schools of Reus and Morón (1940s-1950s) / Captain Mariano Barberán (biography of the pilot of the record breaking Breguet XIX Cuatro Vientos of 1933 / Capronis in the sky (on the Caproni C-310s in the

SCW) / Shot down (interview with General Manuel Sánchez Tabernero, veteran of the SCW and WW2 on the Eastern Front, with the Luftwaffe, shot down there once) / First night missions of the Aviacion Militar 1919-1924, Spanish Morocco) / The Cultural and Historical Branch of the Ejército del Aire, 1927-1997.

As usual, all the articles are profusely illustrated with interesting photographs. Issues can be ordered from: Instituto de Historia y Cultura Aeronáutica, C/ Princesa 88, E-28008, Madrid, Spain. Or, from: Librería Miguel Creus, C/ Congost.11, E-08024, Barcelona, Spain. One issue per year. Price US \$12.00.

Juan Carlos Salgado (SAFCH #1311), Carretera de Bosende (Tolda) 36, 27169 Lugo, Spain.

[Editor's note: Although 'Suomen ...' as been previously reviewed in SAFO, the following is of interest because it illustrates how useful this excellent magazine is to someone who not only does not read Finnish, but is unfamiliar with Finnish-built a/c. The student of Finnish aviation will, of course, know that the Pyry was a training a/c and that the I-12 was indeed built in Latvia.]

"I have recently come across a few (four) issues of the Finnish publication **Suomen Ilmailuhistoriallinen Lehti**, loaned to me by a Finnish correspondent. These sixteen page magazine are written 100% in the Finnish language, so the narrative portion defeats me, but this is really not a problem since the photos and drawings are excellent. They are in the European A4 standard format and printed on glossy paper. Virtually every page has at least one good quality photo, and many have three or four.

"The 3/1994 issue featured some very clear photographs of aircraft in action in Finland at that time. Some of the photos show the Curtiss Hawk 75A, and the Soviet's Polikarpov I-16 and Tupolev SB-2. Some of the rarer airplanes are of the Dornier Do-22 and the Junkers K-43. English captions would have been nice, but the photos were crisp enough to be worthwhile by themselves.

But, the most interesting item was an article on the indigenous Pyry, an airplane of which I was totally unaware. When I first started looking at this article, I thought it was about the Fokker XXI, then, after checking out Pentti Manninen's excellent general arrangement and half-tone drawings, I realized that this was a different aircraft altogether! The fuselage of this airplane was certainly inspired by, or copied from, the Fokker XXI, but the wings and empennage were utterly different. So, in backtracking through the article and looking at the photos carefully through a magnifying glass, I could see that there was no evidence of any wing or fuselage guns installed. The specifications called out a 420-hp Whirlwind R 975-E3 engine, so clearly, this was not a front line fighter. The canopy was certainly shaped like the Fokker XXI's but longer, perhaps for two seats. Was this perhaps a trainer or a communications airplane? The wingspan and length were given as 7.75 m and 7.70 m, respectively. One of the photographs shows five Pyry in a row, but I suspect that there must have been more made. I think that I was initially lead astray by that very nice study of a Fokker XXI on this issue's cover! Just when we 'think we know it all', something like Pyry comes along to keep us humble, it's a heartless world!

"The 3/1995 issue featured an eight page study of the Fokker XXI with some more of Manninen's superb drawings.









# Serial Numbers of RF-84F in U.S. Allies Service

## Part 3: Taiwan and Greece

**Republic of China (Taiwan) Air Force** RoCAF received 25 RF-84Fs between 2/1956 and 1/1958 to replace the aging RF-86Fs. The initial batch of 19 was supplied in 1956, second batch of 1 was supplied in 3/57 and the last batch of 5 was supplied in 1/58. The first 20 RF-84Fs supplied to RoCAF are brand new from the factory ordered by the U.S. for MDAP. The last batch of 5 RF-84Fs which were supplied under MAP in 1958 were ex-USAF RF-84Fs. They all served with #12 squadrons of the 6 Reconnaissance Group and later #4 squadron was included. In RoCAF service, they were in bare metal with yellow band and black trim around the empennage and the wings. RoCAF applied its own 4-digit code (56XX) to the fuselage near the cockpit and on the tail fin. USAF serial numbers were also retained on the tail fin. RF-84Fs were used extensively for aerial reconnaissance over Mainland China. Because of its range, the target areas were limited to the coastal region of Mainland China. A number of RF-84Fs were known to have been shot down. After serving in RoCAF for about 8 years, the surviving 15 RF-84Fs were retired in 1964 and were returned to the U.S. in the same year. Their reconnaissance work was taken over by RF-101A and RF-104G.

1st batch of 19 RF-84Fs supplied in 1956 under MDAP.

USAF serial	RoCAF serial	Version	
51-17022	5601	RF-84F-26-RE	
51-17020	5602*	-26-RE	
52-7435	5603*	-31-RE	w/o
52-7443	5604	-31-RE	

**Greek Air Force** Greek AF received 25 RF-84Fs between 1956 and 1958. 21 of which were supplied under MDAP in 12/56. The other 4 were ex-USAF RF-84Fs and were supplied under MAP in 2/58. In 1963, 2 of the retired Royal Netherland RF-84Fs were supplied to the Greek AF. Similarly, 8 retired Luftwaffe RF-84Fs were supplied to the Greek AF. They all served in 348 Mira Taktikis Anagoriseos (Tactical Reconnaissance Squadron). The Greek AF did not apply its own code to the RF-84Fs and the USAF serial numbers were kept. Greek Air Force started to retire its RF-84Fs in 1986 and the last RF-84F was finally retired in 3/1991.

1st batch of 21 supplied in 12/56 from MDAP  
USAF serial

52-7468  
52-7470  
52-8717  
52-8725  
52-8726  
52-8728  
52-8730  
52-8732  
52-8736  
52-8738  
52-8739  
52-8740  
52-8742  
52-8743  
52-8744  
52-8748  
52-8753  
53-7584

51-17028	5605*	-26-RE	w/o
51-17033	5606	-26-RE	
51-17036	5607	-26-RE	
52-8746	5608	-36-RE	
52-8751	5609*	-36-RE	w/o
52-7441	5610*	-31-RE	
52-7446	5611	-31-RE	
52-8735	5612*	-36-RE	w/o
52-8741	5613	-36-RE	
52-8737	5614	-36-RE	w/o
52-8749	5615	-36-RE	
52-8752	5616?	-36-RE	w/o
52-7354	5617	-26-RE	
52-7449	5618*	-31-RE	w/o
52-8755	5619*	-36-RE	w/o

Note: \* These RoCAF codes were deduced based on the transfer date from the US.

The assignment of 5616 did not fit the pattern based on the transfer date.

2nd batch of 1 RF-84F supplied in 1957 under MDAP

USAF serial	RoCAF serial	Version
52-8756	5620	-36-RE

3rd batch of 5 RF-84Fs supplied in 1958 under MAP

USAF serial	RoCAF serial	Version	
51-1891	5621	-10-RE	w/o
51-1903	5622	-10-RE	
51-1916	5623	-10-RE	
51-1936	5624	-10-RE	w/o
51-1877	5625	-10-RE.	

53-7588  
53-7589  
53-7590

2nd batch of 4 supplied in 2/58 from MAP

51-1846  
51-1848  
51-1849  
51-1871

Note8: Reference 12 reports that this batch of 4 RF-84Fs were supplied to Turkish AF. the author was unable to have any document or photo to prove or disprove this. However, without this batch of 4 RF-84Fs, the author was unable to come up with the 25 RF-84Fs reported in many articles to have been supplied to Greek AF. Author welcomes additional information. Also AF records indicate that 52-8759 was assigned to Greece but other telltales records indicates that it might have gone to Turkish AF.

The following 8 RF-84Fs were received from WGAF in 1963

51-17011  
53-7575  
53-7655  
53-7660  
53-7665  
53-7676  
53-7682  
53-7683

The following 2 RF-84Fs were received from R. Netherland AF in 1963.

51-17001  
51-11253

W. Yip (SAFCH #1421), 535 Diana Place Arroyo Grande, CA 93420, USA.

"I see that on a decal sheet recently issued by the Polish company, Hi Decal, and covering the Ilyushin Il28, SAFO is quoted as a source of reference. Knowing SAFO's area of interest, I assume you contributed towards the Nigerian Ilyushin, NAF 552, which is featured on the sheet. As a long time student of the Nigerian Civil War, I wonder if I might raise a couple of points with you, purely in the interests of accuracy? I photographed two of these aircraft in Nigeria towards the end of the war at which time they carried no serials. For what it's worth the serial group NAF501NAF599 was reserved for helicopters. Also, the upper surfaces of the aircraft I saw were camouflaged in a medium/dark green mottle with no suggestion of the sand colour mentioned by Hi Decal and this camo did not extend underneath the aircraft, this being the usual light blue/grey. I am not for a minute suggesting that your information is in any way incorrect, but would be interested to learning where it originated. Strange things happened in Nigeria in those days so the aircraft could well have been repainted many times! I am simply interested in establishing the truth.

"One final matter. You will be aware that the Biafran Air Force operated two North American B-25 aircraft in addition to the well-documented B-26's. Do you, by any chance, have any information on the colour scheme or markings of these aircraft which operated in the last four months of 1967?" Michael Robson, Squirrel Cottage, Squirrel Ditch, Newsome, Huddersfield HD4 6QF

"There is tragic news from Uruguay. A fire this past 4 December destroyed many of the aircraft preserved at the Museo Aeronautico in Montevideo. The fire started when a TV spotlight used during filming of a TV program set fire to paper used to reduce the light intensity. It immediately spread to the fabric wing of an unique aircraft, the Neybar. The sprinkler system was insufficient to stop the fire which blazed out of control, destroying or damaging all the aircraft in the hangar. This is not only a disaster for the Uruguayan aeronautical community, but several unique-in-the-world aircraft have disappeared forever. For example, of what was perhaps the last surviving Potez 25 in the world, only the engine, the propeller and a few metal parts survive. I visited the site of the disaster two days later. The only survivors in the hangar are a T-6 (FAU 373) and a UH-1B (FAU 061) both with minor damage. A C-47 (FAU 521) cockpit section stands virtually intact.

"The list of losses is the following: (1) Two Castaiberts monoplanes manufactured in Argentina by Paul Castaibert, a French designer, constructor, and pilot. The Escuela Militar de Aviacion purchased, in 1917, five Castaiberts of different types, varying in horsepower, number of crew, and flight characteristics. The Museum aircraft were a 70 hp and 80 hp. In March 1953 the 80-hp machine made a flight commemorating the 40th anniversary of the military air school in Uruguay (1913). (2) A Potez 25 TOE, the last of ten received by the Escuela Militar de Aviacion between 1929 and 1931. The Museum sample was number 404 (ex 4) that last flew on 20 Dec 1948 - a long time after the others were retired from service. (3) A DH-60G Gipsy Moth, registration CX-AAI that arrived in Uruguay in November 1936. (4) A Focke-Wulf Fw 44J Stieglitz (built under licence in Brazil as the IFG 'Pintassilgo'. Donated by the Brazilian government in January 1943 to the Direction of Civil Aeronautic Department. Registered CX-AEI, it

was named in honor of the then President of Brazil, 'Presidente Vargas'. (5) A DH-90 Dragonfly which was one of the Museum's gold pieces. Registered CX-AAR and named for a bird 'Churrinche' it was one of the first two aircraft of our flag airline PLUNA which was founded in 1936. (6) A Fairchild PT-19 (FAU 634). (7) A Curtiss SNC-1 Falcon registered B2-205 which was used by the Aeronautica Militar (pre FAU). The lone survivor of nine acquired in 1942. The center section of the wing suffered damage in the fire. (8) A DHC-1 Chipmunk Mk21 used by the FAU and then loaned to the DGAC (Civil Aviation) where it served until 1945. Registered CX-AVA, it was damaged in the fire, but not totally consumed. (9) A Neybar; a unique Uruguayan-design of 1947. A light aircraft constructed by Vladimir Neyeloof and Fernando Barrandeguy. Registered CX-AGI, it featured a retractable undercarriage seldom seen in light aircraft of the period. (10) A replica of the first aircraft in the world to take off without the help of a catapult; the 14bis of Santos Dumont. (11) Also totally consumed were the wing surfaces of a replica of a Farman 1913, the first military aircraft of Uruguay. Named 'El Aguila' (Eagle). (12) Slightly damaged were Link trainer, an old glider (ex AKH), and a balloon Model AX-7 CX-BPH.

"The outdoor exhibits were, fortunately, not damaged. These consist of (1) a B-25J (ex-Brazil FAB 5087) which was painted by a team of volunteers as FAN 156 and named 'Charrua' circa 1960. (2) A T-11 Kansan (FAU 101). (3) A fiber-glass copy of an F-51D. (4) A F-80C (FAU 213) which last flew with the FAU as 218. (5) A C-47B CX-BDB, ex-RAF, which was used by our flag airline PLUNA. Painted recently by volunteers and museum personnel. (6) A Lockheed 18 Lodestar N-64915 confiscated from smugglers.

"The Museum needs help in reconstructing some of these losses and for the total rebuilding of the exhibition hangar. If any institution or individual can help, please write to: Colonel Angel Hernandez, Museo Aeronautico, San Gabriel 4004, Montevideo, Uruguay. Phone (0115982) 215 2039. (If all SAFCH members were to send 1 to 5 dollars to the Museum, we would be able to start reconstruction. I promise to keep SAFO informed about progress in reconstruction.)"

Eduardo Luzardo (SAFCH #1383), Picardia M.267 S.37, 91001 Barros Blancos R.8 KM. 22,500, Uruguay.

"Thank you for the recent copy of your journal with the JG 53 review. I am pleased you like the book. However, the volume you reviewed is volume two of a three volume set: volume one covers the period from 1937-May 1942; volume two covers May 1942-January 1944; with volume three covering January 1944 to the end of the war. Volumes one and two are now available, with volume three available this upcoming summer. Volume three will also have complete aerial victory listings, as well as index, and other appendices. Total page count for the three volumes will be over 1100, with the photo count at roughly 1400."

Robert Biondi, Senior Editor, Schiffer Publishing Ltd., 4880 Lower Valley Road - Rt 372, Atglen, PA 19310, USA. Fax (610) 593-2002. Telephone (610) 593-1777, E-mail: Schifferbk@aol.com.

"A few comments on No.37: [1] Enjoyed friend Tony Sapienza's article on Paraguayan Cessna 206s. Just one note to add. If Army TE-01-A was indeed formerly ZP-PLN, this would make it c/n 3981 and

also ex (N756CJ probably not worn). [2] Friend Santiago Flores' article on 'Three Aircraft of the Mexican Air Force' was excellent, and the accompanying drawings by Enrique Velasco also outstanding. As is usual with this exotic aircraft, however, and although Santiago talks about its origins, we are often left wondering exactly how to file references to the Baja California aircraft. I believe the actual manufacturing company name was Compania Aeronautica Nacional S.A. In the nice drawings, Enrique notes the builder as Cia. Aeronautica Manufacturera y de Transporte S.A. which I must admit to never having seen before. The emblem seems to bear out this unusual title. I think strictly speaking, however, that this aircraft was not FAM property. I think a slight typo was made in Santiago's description of the Bristol Boarhounds (he had Boardhound), and repeated this not less than five times in the text! [Editor's note: This was probably my mistake when the article was 'scanned' into my computer.] Both of these aircraft were still on the Order of Battle as late as 26 March 1934. Interestingly, #7232 (identified as such) was at Kelly Field, Texas, along with Vought Corsairs #561, 562 and 563 circa 13 June 1929. Apparently, the Boarhound was accompanying the Corsairs on delivery. I note that Enrique got the name right on his excellent drawing. [3] In his short piece with the drawing of the Brazilian Grumman J4F-2, Antonio Pereira Linhares did not mention that at least one of the aircraft also had the FAB designation ZCA-4F2. So far as I can document, the last two examples were on strength (as ZCA4F2's) at 1 June 1958, most of the others having fallen victim to accidents in 1945, 1947, 1949 and 1952. I have seen only one color illustration of an actual wartime example, and it appears to have had standard USN camouflage for the 1942-43 period with FAB insignia in the usual locations. There is no record of these having been used on anti-submarine patrol, so far as I can determine. A Grumman Tech Rep (J. D. Ahlers) stated on 19 September 1944 that they were 'assigned to a number of bases being used as VIP and transport aircraft and are, on the whole, fairly well taken care of.' The paint scheme on the example at the FAB Museum is a slight fiction, I think."

Dan Hagedorn (SAFCH #394), P.O. Box 682, Centreville, VA 201220682, USA.

"From the tone of your editorial in the October issue, I gather that you have doubts about the continued viability of SAFO in the printed medium. Let me give you my two cents worth. As you may know, Mario Overall in Guatemala mounted a very interesting web page called AeroGuat, which did a very good job and broke much new ground. However, Mario suddenly lost his job with the U.S. Embassy in Guatemala City and, just as quickly, AeroGuat and all of his hopes for the future came crashing down. Likewise, at the (National Air & Space) Museum, although we have a lot of pressure to try to go 'on line', and we have in fact opened a web page and e-mail reference address, we are being extremely cautious about this for a number of reasons.

"While the Internet has certainly proven to be a boon to communication and interchange of ideas and thoughts it has a number of very important shortcomings. First and foremost, there seems to be what I call (on the Museum end of the business) 'Promiscuous Inquiries'. On the surface of it, this may appear quite harmless and, I suppose, in certain cases can be shown to be a result of honest curiosity. More often, however, these kind of ill-

thought-out, spur of the moment 'questions' simply swamp the system. Apparently the correspondents simply do not recognize this at all, and, indeed, usually re-send the inquiry within a matter of hours if they do not receive a virtually (pardon me) instantaneous response!

"In our avocation, where research is often measured in years, if not decades, the fruits of our labors can certainly be enhanced and complemented by electronic input. It can also, however, rob us of valuable time that cannot be replaced, while off pursuing something on the Internet that we assume must be 'out there' somewhere, if only we just ask the right question or find the right web site.

"I have found prodigious quantities of erroneous and, indeed, spurious 'information' on the net, which leads to my next point: the Internet is often anonymous and, more often, not accountable. I believe that eventually this will spell the doom of the system, as more and more idiots inhabit those regions and pollute the quality of the information pool. As with any new technology, I know that this is an oft repeated prediction and I am probably revealing my conservatism in the speaking. However, in this instance, having received an average of between 50-75 e-mail inquiries at NASM per week, I can speak with some authority. When compared with the 300-400 written inquiries we receive there is, quite simply, no comparison in the quality, thoughtfulness nor seriousness of the two mediums."

Dan Hagedorn (SAFCH #394), P.O. Box 682, Centreville, VA 201220682, USA.

"In 1916, the Dutch military attache in Paris began looking for aircraft for the Luchtvaartafdeeling (LVA). By the end of the year, five 110-hp Nieuports and five twin-engined Caudron G.IV

were ordered. Then, in early February 1917, more aircraft were offered: five 80-hp Nieuports and five more Caudron G.IV. The Dutch authorities reacted at once and payment was sent immediately. The extra aircraft were from a Romanian order, which could not be delivered as Romania had been occupied by Austria-Hungary late in 1916. [Author's note: Is anything known about these Romanian order?]

"It took quite a time before these aircraft, ten Nieuports but only five Caudrons, would arrive in Holland. Late in 1917, they were loaded onto the Dutch freighter SS 'Rhea' at Vigo, Spain. The 'Rhea' had been chartered by the Dutch Government to collect various vital cargo, including these aircraft. The ship was boarded and held by the Royal Navy, and did not arrive in Holland until June 1918.

"On 24 June, the aircraft arrived at Soesterberg airfield and, within a few weeks, some of the Nieuports and one Caudron had been assembled and test flown. Recently it became clear that these Nieuports were not types N.11 and N.17, but N.21 and N.23. The N.21's were serialized N215-219 and the N.23's N220-224. The Caudrons were serialized C427-431.

"Because much of the Dutch military archives were lost during WW2 (because of RAF bombing in 1945), it is not now known how long these aircraft served. It seems that the N.21s were withdrawn by 1920, but there exists a bad photo of a N.23 with the red-white-blue roundel, which was introduced mid-1921. Another photo suggests that a N.23 was used for meteo flights, which started mid-1919. This task was later taken over by the Fokker D.VII, which were delivered in Summer 1920. The Caudrons must have been written off in 1919. After the first one (C427) crashed on 1 November 1918, when it collided with a Farman HF-22 (both crews killed),

assembly of a replacement was not completed and it seems that they were sold.

"Trompenburg built 20 N.11 using the interned N.11 N213 (ex-3981) as a model. These were delivered in 1918 as N230249, but they were not flown before 1920. A small number was used for some years as advanced trainer, but the type was so different from the Fokker D.VII that its use was minimal. All remaining WWI aircraft were sold as scrap in 1925-26.

"There has been an error published concerning the aircraft bought in France. It was reported, by the LVA commander in 1918, that these aircraft had been ordered in 1915. This assertion was repeated in the LVA Memorial Book on the 25th anniversary of the service published in 1938. Surviving documents make it very clear that these aircraft were ordered late 1916/early 1917. Moreover, these Nieuport and Caudron types did not even exist in 1915. The error in the original report has not been explained."

Fritz Gerdessen (SAFCH #12), Fijscheerderstraat 12, 4204 ES Gorinchem, Nederland.

"I've just obtained the new Marivox Saab B17. It has markings for Ethiopia (neat looking) and Denmark (with the large white outer ring). The kit looks good, but the instructions leave a lot to be desired. I've about completed Hobbycraft's C-7 Caribou in the Tanzanian markings. Good kit, but you to watch the fit. I've just read (in Scale Aviation Modeller) that the Tasman 1/72 DH-84 Rapide has Kenyan decals." [Editor's note: According to IPMS-Canada's RT, Hobby Craft's DCH-4 Caribou has Tanzanian decals.]

Rick Webber (SAFCH #923), 6953 Arboreal, Dallas, TX 75231, USA.

## Photo Captions

### Photo Captions (page 2)

Museo Aeronautico Montevideo. (All photos by Eduardo Luzardo. See letter on page 6.) (1) Castaibert IV 80 ph "Raid B.A. Mendoza". Acquired in 1916 for use by the Escuela Militar de Aviacion. It resembles the Morane F/G. Silver overall with wood front fuselage and landing gear. Natural metal cowl. Black lettering. (2) Potez 25TOE '404' (ex '4') c/n 3055. Used from 1933 to 1949. Dark green overall with white numbers. (3) DH.90 Dragonfly 'CX-AAR' of PLUNA, c/n 7532 "Chur-ringhe". One of the first two a/c of the Uruguayan flag airline which was founded in 1936. Red overall with silver wings, white registration, and Uruguayan flag on fin. (4) Curtiss SNC-1 Falcon 'B2-205'. One of nine acquired in 1942 by the Aeronautica Militar. natural metal overall with yellow tail surfaces and upper surface of the wing. Black '205' and antiglare panel. (5) Neybar 'CX-AGI' Uruguayan design of 1948. One one built. Note retractable landing gear. Red overall with white fuselage flash and name, silver registration, and gloss black lower cowl. (6) F-51D '207' is a fiber-glass copy of the original which is now in the USA at the Tuskegee Squadron Museum. ~ Natural metal' overall with black serial and antiglare panel, red spinner with black, silver, red tipped propeller blades. (7) B-25J 43-27847. Ex-Brazilian AF '5087' painted to represent FAU '156' "Charrua". Natural metal with black serials, an-

tiglar panel, and nacelles (not red as shown in several other publications). Propeller black are black with yellow tips. (8) F-80C 49-3597 '213' was received under MDAP on 12 May 1958. This probably Korean War veteran is in excellent condition. Silver overall with black serials and antiglare panel. Red intake lips.

### Photo Captions (page 36)

(1a) Mil Mi-8, Lithuanian Air Force. Overall white with a dark blue fuselage band with a black stripe below it. The band above the fuselage is light grey. The serials are light blue and the exhaust panels are black. (1b) PZL-W3 Sokol, Czech Air Force. The camouflage is light grey, dark grey, and olive green. The serials are light grey and the door is outlined in yellow. The Bohemian Lion below the window is light grey. (1c) PZL-W3 Sokol, 103 Air regiment from Warsaw-Babice. The camouflage is yellow, green, and tan with bright blue lower surfaces, undercarriage, wheel hubs, and tail bumper. The serial is white and the tail stripes are blue and white. The tail rotor is white with two red stripes. The door is outlined in red. (All photos Dariusz Karnas, SAFCH #999).

(2a) Lithuanian An-2 '03'. Olive green overall with white outlined blue serial. White Antennae and black propeller blades with yellow tips. Lithuanian national insignia is white and black. (2b) Lithuanian Yak-55 '16'. Overall white with the

fuselage blue, red, and blue. Wing tips are red as are both sides of the horizontal tail. The serial, propeller blades, and tip of the vertical fin are blue. The color of the undersurface of the wing is unknown. (2c) Lithuanian Airlines Yak-42 'LY-AAS'. The top of the fuselage is white. The wings, horizontal tail, and lower part of fuselage are silver. The wings tips and the tips of the horizontal tail are red. The fuselage flash is gold with a thin black stripe below. All lettering is black and the tail logo is green. The Lithuanian flag is yellow/green/red (from top). (All photos taken at Vilnius, Lithuanian, in 1993 by David Dulaitis, SAFCH #913.)

(3a & 3b) Dornier Do-28-D2 Skyservant '70501'. Yugoslav Air Force, Batajnica Air Base, Open Day, June 1997. White overall with blue and red (from top) fuselage stripes, and red nacelle flashes. Black leading edge to wings with red tips to wings and all tail surfaces. Black serial and antiglare panel. Flag is blue/white/red (from top) and new Yugoslav national insignia appears on top port and lower starboard wing surfaces (blue/white/red from front). White spinner with light grey propeller blades with two white stripes at tips. (Photo by Nenad Miklusev SAFCH #1456. A review of Nenad's Yugoslav Air Force SIG appears on page 21 of this issue.)





